



MINISTRY OF SCIENCE AND HIGHER EDUCATION  
OF THE RUSSIAN FEDERATION  
Federal state autonomous educational institution  
of higher education  
«Far Eastern Federal University»  
(FEFU)

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**SCHOOL OF BIOMEDICINE**

" AGREED BY"

«General medicine» educational program  
Supervising person

Yu.S. Khotimchenko



" APPROVED BY"

Clinical Medicine  
Department Director

B.I. Geltser

« 14 » \_\_\_\_\_ of January \_\_\_\_\_ 2021

« 14 » \_\_\_\_\_ of January \_\_\_\_\_ 2021

**WORKING PROGRAM OF ACADEMIC DISCIPLINE (WPAD)**  
**Commercialization of Scientific Research**  
Education program  
Specialty 31.05.01 «General medicine»  
**Form of study: fulltime**

year 6, semesters B, C  
lectures 18 hours.  
practical classes 36 hours.  
laboratory works are not provided  
total amount of in-class lessons 144 hours  
including using ALM 18 hours  
independent self-preparation 90 hours  
including preparation to exam is not provided  
course paper / course project not provided  
pass-fail exam at the year 6, B,C semester  
exam is not provided

The working program was drawn up in accordance with the requirements of the federal state educational standard of higher education 31.05.01 in the direction of training "General Medicine" (level of training specialist), approved by order of the Ministry of Science and Higher Education of the Russian Federation dated August 12, 2020 No. 988 and the Educational Plan in the direction of training "General Medicine".

The working program of the discipline was discussed at the meeting of the Department of the clinical medicine. Protocol No.5, 14 January 2021

Prepared by: PhD of Medical Sciences, Associate Professor Rasskazova V. N., Assistant Maslyantsev E. V.

Vladivostok  
2021

**Reverse side of the title page of the WPAD**

**I. The work program was revised at the meeting of the Department:**

Protocol dated "\_\_\_\_\_" \_\_\_\_\_ 20\_\_ No. \_\_\_\_\_

Department Director \_\_\_\_\_  
(signature) (Full Name)

**II. The work program was revised at the meeting of the Department:**

Protocol dated "\_\_\_\_\_" \_\_\_\_\_ 20\_\_ No. \_\_\_\_\_

Department Director \_\_\_\_\_  
(signature) (Full Name)

**III. The work program was revised at the meeting of the Department:**

Protocol dated "\_\_\_\_\_" \_\_\_\_\_ 20\_\_ No. \_\_\_\_\_

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Department Director \_\_\_\_\_  
(signature) (Full Name)

## **I. GOALS AND OBJECTIVES OF MASTERING THE DISCIPLINE:**

The GOALS of studying the discipline "Commercialization of scientific developments" is the formation of students' systematic understanding and professional competencies in the field of commercialization of the results of scientific and practical activities, competent presentation of their own developments and those of colleagues in the market.

### **OBJECTIVES:**

1. Formation of knowledge for commercialization of scientific and practical developments;
2. Formation of competencies for competent presentation of their scientific and practical developments on the market;
3. Study of the regulatory framework for the organization and management of scientific research;
4. Mastering scientific activity management systems;
5. Familiarization with methods and criteria for evaluating the effectiveness of scientific research; mastering the assessment and analysis of the effectiveness of an innovative project;
6. Familiarization with the basics of patent research and patent licensing work;
7. Formation of skills in studying scientific literature and official statistical reviews on the commercialization of scientific and practical developments.

As a result of studying this discipline, students develop the following professional competencies and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competence achievement indicator
medical	PC-16-Capable and ready to perform analysis of morbidity, disability and mortality indicators to characterize the health of adults and adolescents	PC-16.1-observation of medical and statistical indicators of morbidity, disability and mortality characterizing the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies
		PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional field
	PC-17-Is ready to participate in the assessment of the quality of medical care using basic medical and statistical indicators	PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research

Code and name of the competence achievement indicator	Name of the assessment indicator (the result of training in the discipline)
PC-16.1-observation of medical and statistical indicators of morbidity, disability and mortality characterizing the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies	Knows medical and statistical indicators of morbidity, disability and mortality, the procedure for issuing documents certifying temporary and permanent disability, as well as methods for evaluating scientific sources of information; algorithm for compiling a monographic and review abstract features of a scientific text and requirements for its design; ways of presenting numerical information.
	Able to analyze medical and statistical performance indicators of a medical organization that characterize the health of the attached population using educational, scientific, popular science literature, the Internet for professional activities

Code and name of the competence achievement indicator	Name of the assessment indicator (the result of training in the discipline)
	Possession the methodology for calculating and evaluating quantitative and qualitative medical and statistical indicators of work on morbidity, disability and mortality of medical organizations and their structural divisions; present the results of analysis of medical and statistical indicators of morbidity, disability and mortality of patients, as well as methods for analyzing the results of their own activities to prevent professional mistakes: knowledge of various functions of a manager: planning, organization control , regulation, monitoring and controlling, ability to consciously choose the optimal strategy, etc.
PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional field	<p data-bbox="707 622 1487 725">Knows the principles, methods and tools for analyzing statistical reporting, including forms of branch and federal statistical observation</p> <p data-bbox="707 734 1487 837">It can solve standard tasks when analyzing data from official statistical reports, including federal and industry sources of statistical observation.</p> <p data-bbox="707 846 1487 911">Has skills in preparing reports and publications on the analysis of official statistical reporting data</p>
PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research	<p data-bbox="707 920 1487 1240">; Knows how to maintain standard accounting and reporting medical documentation in medical organizations on morbidity, disability and mortality indicators when assessing the health of the attached population, as well as the essence of evidence-based medicine; types of scientific sources of information; methods of evaluation of scientific sources of information; algorithm for compiling a monographic and review abstract; features of a scientific text and requirements for its design</p> <p data-bbox="707 1249 1487 1538">Can analyze and evaluate the quality of medical care, use medical information systems to assess the health of the attached population; analyze and evaluate information from scientific sources; compile a monographic and review abstract on the research topic; analyze ways to present numerical data in terms of speed of perception, data volume, and logic; create a presentation to the report on the results of the study</p> <p data-bbox="707 1547 1487 1794">Has the skills of analyzing and preparing reports, compiling reports on medical and statistical indicators of morbidity, disability and mortality to assess the health of the attached population; skills in designing a scientific text; - skills in determining the type of numerical data; skills in choosing the optimal way to present numerical data using different types of tables and diagrams</p>

For the formation of the above-mentioned competencies within the discipline "Commercialization of scientific developments" the following active/ interactive learning methods are used:

1. It is planned to conduct practical classes using computer training programs.
2. To organize independent work, it is proposed to prepare essays and reports for speaking in a group and at a student conference; prepare for practical classes, work with additional literature; perform scientific work in the form of writing an article on a research topic chosen or proposed by the teacher.

The share of practical classes conducted in interactive forms is 12.5% of the classroom time; independent extracurricular work is 62.5% of the time.

## **II.LABOR INTENSITY OF THE DISCIPLINE AND TYPES OF TRAINING SESSIONS IN THE DISCIPLINE**

The total labor intensity of the discipline is 4 credit units (144 academic hours - 1 credit unit corresponds to 36 academic hours).

Types of training sessions and work of the student in the discipline can be:

Designation	Types of training sessions and work of the student
Lek	Lectures
Pr	Practical exercises
Online	Online course
SP	Selfpreparation of the student during the theoretical training period
Control	Independent work of the student and contact work of the student with the teacher during the intermediate certification period

Structure of the discipline:

The form of training is full – time.

№	Section name Disciplines	Term	Number of hours by type of training sessions and work of the student						Forms of intermediate attestation, ongoing monitoring of academic performance
			Lek	Lab	Pr	OK	WED	Control	
1	Module 1. Organization of scientific activities in Russian universities	B	4		4			20	
2	Module II. Organization of work with scientific and technical information at the university. Patent and licensing activities	B	4		8			25	OQ-1, OQ-3, WW-1, WW-3, WW-4, WW-9

3	Module III. Kcommercialization of scientific research and its legal support	B	4		12		15	
4	Module IV. University innovation infrastructure	B, C	2		8		15	
5	Module V.. Features and prospects of student science development in higher education institutions	B, C	4		4		15	
Total:			18		36		90	

### **III. STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE**

#### **LECTURE SESSIONS (18 hours)**

**11 semester (18 hours, including using ALM-10 hours)**

#### **MODULE 1. ORGANIZATION OF SCIENTIFIC ACTIVITIES IN RUSSIAN UNIVERSITIES (4 hours)**

**Topic 1 (2 hours) Organization of scientific activities at the Higher School of Economics of Russia.** Classification of areas of scientific activity. Types of scientific work. Organization of scientific research. Regulatory and legal basis for the organization and management of scientific research.

**Topic 2 (2 hours) Systems of scientific organizations.** Foreign scientific organizations. Features of the organization of scientific research in the USA, Europe, and Japan. Science management system. Features of organizing and stimulating scientific work. Features of the organization and management of the research team. Ethics of scientific work. Criteria for the effectiveness of scientific research. Methods and criteria for evaluating the effectiveness of scientific research.

#### **MODULE 2. ORGANIZATION OF WORK WITH SCIENTIFIC AND TECHNICAL INFORMATION AT THE UNIVERSITY. PATENT AND LICENSING ACTIVITIES (4 hours)**

**Topic 3 (2 hours) Information support** of scientific research and development conducted at the university, the educational process with scientific and

pedagogical, scientific and technical, and economic information. Organization and implementation of promotion of scientific and technical achievements of the university by organizing scientific forums, exhibitions, advertising the results of scientific research and development.

**Topic 4 (2 hours) Organization of submission of scientific, scientific and technical information for state registration.** Information resources of SSSTI bodies. Federal, industry-specific, and regional information centers. Organization of presentation of scientific, scientific and technical information to FEFU. The role of the FEFU Exhibition Center in promoting scientific products. Fundamentals of patent research and patent licensing work.

### **MODULE 3. COMMERCIALIZATION OF SCIENTIFIC RESEARCH AND ITS LEGAL SUPPORT (4 hours)**

**Topic 5 (2 hours) Comparison of scientific and technological activity in leading countries.** Definition of the innovation process and the process of commercialization of developments. Regulatory legal acts and guidelines in the field of innovation activity. Structures that support technology transfer (development commercialization offices).

**Topic 6 (2 hours) Financing of innovation activities.** Development lifecycle. Stages of the innovation process. Stages of commercialization of scientific developments: monitoring of developments; technological audit of developments; business plan of an innovative project; regulatory and technical support of developments; legal support of commercialization. Existing legal forms of IP commercialization. The role of small innovative enterprises: 4 models of innovative business organization.

### **MODULE 4. UNIVERSITY INNOVATION INFRASTRUCTURE (2 hours)**

**Topic 7 (2 hours) Main elements of the national innovation system.** Regulatory and legal framework of innovation activity in Russia. Objectives of the Far Eastern University aimed at the development of the regional innovation system. FEFU innovation activity infrastructure. Regulatory framework for the



formation of the FEFU innovation environment. The role of ITC in the FEFU innovation process. The role of SBI in the FEFU innovation process. The role of the business incubator in the FEFU innovation process.

**MODULE 5. Features and prospects of student science development in higher education institutions (4 hours)**

**Topic 8 (2 hours) System of organization and management of scientific and technical research research work of students and young scientists.** Features and prospects of student science development. Motivation of students to research and scientific supervisors to lead students.

**Topic 9 (2 hours) Features of student science development at FEFU.** Programs and competitions as an indicator of a systematic approach to motivation development at FEFU. Effective scientific guidance in the NRUNIRS-NTITM system.

**IV. STRUCTURE AND CONTENT OF THE PRACTICAL PART OF THE COURSE**

**PRACTICAL CLASSES for the 11th semester (36 hours, including 8 hours using MAO)**

**Topic 1. Introduction to Entrepreneurship and Innovation (4 hours)**

Innovative elevator. Stages of innovative product development in healthcare. Innovations in Russia. The concept of innovation. The place of innovation in the economy and healthcare. Definition of innovations in the federal and regional legislation of the Russian Federation Priority areas of development. Modern approaches to the definition of innovations and models of the innovation process. Classification of innovations. 8 The need for innovation in the company's activities and the effects produced by innovation. Technological limit and technological gap. Business experience – first year. How do I start my own business? Mistakes and difficulties at the beginning of business development. The difference between an innovative business and a traditional one. Planning your life trajectory.

## **Topic 2. Methods of generating entrepreneurial ideas (4 hours) Methods of generating ideas.**

Intuitive idea search – use in business. The relationship between economic cycles and innovation, long waves and market cycles. Basic innovations and technological structures. High-tech clusters: the experience of the US states, priority areas for the development of science, technology and technologies of the Russian Federation, a list of critical technologies of the Russian Federation. TRIZ. MFI, morphological mailbox. Examples.

## **Topic 3. Innovation support infrastructure (4 hours)**

Entrepreneurial activity and entrepreneurial abilities. Business environment and space. History of the development of the theory of innovative entrepreneurship. Forms and functions of innovative entrepreneurship. An economic organization. The nature of the company. Firm as a way of organizing business activities. Economic basis of innovative entrepreneurship. Small and large enterprises in innovative business. Measures of state support for entrepreneurship and innovation: grants, competitions, etc. in Primorsky Krai: SEZs, business incubators, technology transfer centers. In FEFU: a business incubator.

## **Topic 4. Project management (4 hours)**

The concept of innovation and innovation process. Approaches to the definition of innovation. Causes of uncertainty in decision-making processes and diffusion of innovations in a market economy. Types of innovations. Parameters for classifying innovations. Project concept. Main stages of the project life cycle. Project initiation. Goal setting in the project. Project planning. Calendar planning methods (Gantt chart, Spider), resource and financial planning methods. Work on a project in groups.

## **Topic 5. Managing an entrepreneurial project team (4 hours)**

Innovation process and innovation activity. Characteristics, distinctive features, and types of innovation process. Innovation process models and their classification. Forms and phases of the innovation process. Stages of the innovation process and their characteristics. Scientific and technical activities and innovative

activities. Organizational structures of innovative entrepreneurship. Concept, attributes, types, and stages of team formation. Team performance indicators. Measures to influence team activities. Development of teamwork skills. Forming a team. Roles in the team.

#### **Topic 6. Business Law (4 hours)**

Forms of small business organization. Legal Entity registration Procedure. Features of choosing an economic and legal form. What you need to know at the stage of designing your business from a legal point of view. Intellectual property and intangible assets-as a market product, their characteristics and classification. Forms of promotion and implementation of innovations in the market. Pricing policy and communication tools of the innovation market.

#### **Topic 7. Commercialization of scientific and medical developments (4 hours)**

Structure and functions of the innovation infrastructure. Innovation market infrastructure. Elements of the infrastructure of scientific, technical and innovative activities. Financial infrastructure. Production and technological infrastructure. Features of innovative infrastructure development in Russia. State bodies regulating innovation activity. Innovative legislation of the Russian Federation. Special legislative framework on innovations. Tools for regulating and supporting innovation activities. Financing the development of innovative activities. Institutions for the development of financial innovation infrastructure At the stage of the commercialization process. Investors. Market. Methodological approaches to the formation of NIS. Concepts of national innovation systems. Structure and main components of NIS. Models of the national innovation system. Evaluation of NIS effectiveness. Formation of a unified NIS in the EU. Global Innovation System (GIS). Contours of Russia's NIS development and its place in the world. NIS model of Russia.

#### **Topic 8. Business modeling (4 hours)**

Creating a balanced business model: A graphical model of the business process. Simulation model of the business process. Executable business process

models. Priority of sales or production. Implementation of the business model. Types of business process models: functional, describing the set of functions performed by the system and their inputs and outputs; behavioral, showing when and/or under what conditions business functions are performed, using categories such as system state, event, transition from one state to another, transition conditions, sequence of events; structural describing the morphology of the system — the composition of subsystems, their relationships; informational, reflecting data structures — their composition and relationships. Basic principles of business process modeling.

#### **Topic 9. The art of presentation (4 aud. hours)**

Basics of public speaking. Types of presentations (linear-managerial, commercial, scientific, advertising, socio-political), non-linear presentations, cyclical presentations, mixed presentations. The art of creating a presentation. Presentation principles: modular, chronological, geographical, and spatial. Preparing slides. Ways to present presentations. Stylistics and grammar. Perception of information on the screen. Color design of the presentation.

### **V. EDUCATIONAL AND METHODOLOGICAL SUPPORT OF STUDENTS ' INDEPENDENT WORK**

Educational and methodological support for independent work of students in the discipline "Commercialization of scientific developments" for the development of practical skills of students, the educational module includes creative independent work, during which students perform a creative project on a selected topic during the semester.

The topic of the creative project is formed based on the results of the topic "Methods of generating entrepreneurial ideas" and should reflect the direction of the student's training.

To complete a creative project, students join teams of 2 to 5 people.

As an additional task, students can take part in face-to-face conferences on the topic "Medical entrepreneurship".

Educational and methodological support for independent work of students in the discipline "Methodology of scientific research in medicine" is presented in Appendix 1 and includes::

- schedule of independent work in the discipline;
- characteristics of tasks for students ' independent work and methodological recommendations for their implementation;
- requirements for the presentation and design of the results of independent work;
- criteria for evaluating the performance of independent work.

Schedule of independent work in the discipline

<b>№ n/</b>	<b>a Date/time of completion</b>	<b>Type of independent work</b>	<b>Approximate execution time limits (hour)</b>	<b>Control form</b>
<b>semester 11</b>				
1	1-3 days	Report. Individual task	20 hours	OQ-3-Report
<b>semester 12</b>				
2	4-6 day	Presentation of a presentation on the topic of the abstract. Presentation of individual task results	30 hours	OQ-3-Report, message
3	7-9 day	Defense of a creative project. Preparation for the test.	40 hours	of OQ-1-Interview PR-1-Test Test
Total:			90 hours	

Self-preparation includes:

1. Library and home work with educational literature and lecture notes,
2. Preparation for practical classes,
3. Completing an individual task,
4. Preparation of a scientific article,
5. Preparation for testing and control interview (test).

The main content of topics, assessment tools: terms and concepts necessary for mastering the discipline are presented in the RPA.

In the course of mastering the course "Methodology of scientific research in medicine", the student will have to do a large amount of independent work, which

includes preparing for practical classes and writing a scientific article.

Practical classes help students to learn more about the educational material, acquire skills of creative work on documents and primary sources.

Plans of practical classes, their topics, recommended literature, the purpose and objectives of its study are communicated by the teacher in introductory classes or in the curriculum for this discipline.

Before starting to study the topic, you need to familiarize yourself with the main questions of the practical lesson plan and the list of recommended literature.

When preparing for a practical lesson, first of all, you need to refer to the lecture notes, sections of textbooks and study guides in order to get a general idea of the place and meaning of the topic in the course you are studying. Then work with additional literature, make notes on recommended sources.

In the process of studying the recommended material, it is necessary to understand the structure of the topic under study, highlight the main points, follow their logic and thereby understand the essence of the problem under study.

It is necessary to keep records of the studied material in the form of a synopsis, which, along with visual memory, also includes motor memory and allows you to accumulate an individual fund of auxiliary materials for rapid repetition of what you read, for the mobilization of accumulated knowledge. The main recording forms are: a plan (simple and detailed), extracts, and abstracts.

In the process of preparation, it is important to compare sources, think through the material being studied and build an algorithm of actions, and carefully think through your oral presentation.

At the practical lesson, each participant should be ready to speak on all the issues raised in the plan and show maximum activity when considering them. The presentation must be convincing and well-reasoned, and it is not allowed to simply read the abstract. It is important to show your own attitude to what is said, express your personal opinion, understanding, justify it and draw the right conclusions from what is said. At the same time, you can refer to the notes of the synopsis and lectures, directly to the primary sources, use knowledge of monographs and publications,

facts and observations of modern life, etc.

A student who did not have time to speak at the practical lesson can present the prepared abstract to the teacher for verification and, if necessary, answer the teacher's questions on the topic of the practical lesson in order to receive a credit score on this topic.

**Creative problem-oriented independent work (TSR)**, focused on the development of intellectual skills, a set of general professional and professional competencies, and increasing the creative potential of students. TSR can include the following types of work on the main problems of the course:

- search, analysis, structuring and presentation of information,
- performing calculation and graphic works;
- research work and participation in scientific student conferences, seminars and Olympiads;
- analysis of scientific publications on a pre-determined topic by the teacher;
- analysis of statistical and factual materials on a given topic, performing calculations, drawing up diagrams and models based on statistical materials.

**Planning and organizing the time allotted for completing tasks of independent work.**

After studying the schedule of independent work, you should organize it correctly. It is recommended to study the structure of each task, pay attention to the schedule of work, and report on each task in the last week according to the schedule. Please note that the results of independent work affect the final assessment based on the results of mastering the academic discipline.

*Working with literature.*

When performing a number of tasks, you need to work with literature. It is recommended to use various opportunities for working with literature: collections of the FEFU Scientific Library (<http://www.dvfu.ru/library://www.dvfu.ru/library/>) and other leading universities in the country, as well as available scientific library systems.

When performing independent work,

including writing an essay, it is recommended to work with the following types of publications::

a) Scientific publications intended for scientific work and containing theoretical and experimental data on research. They can be published in the form of: monographs, scientific articles in journals or in scientific collections.

b) Educational literature is divided into:

- educational publications (textbooks, manuals, lecture texts) that contain the most complete systematic presentation of the discipline or any of its sections;

- reference books, dictionaries, and encyclopedias – publications containing brief

information of a scientific or applied nature that are not intended for continuous reading. Their goal is to quickly get the most general ideas about the subject.

There are two methods of working on sources:

- continuous reading is mandatory when studying a textbook, chapters of a monograph or article, that is, what has educational significance. As a rule, it requires repeated reading in order to understand what is written. Try not to skip comments, footnotes, or reference materials when reading a full page, as they are intended to explain and help. Analyze drawings (maps, diagrams, graphs) and try to understand what trends and patterns they reflect.

- the method of selective reading complements continuous reading; it is used to search for additional, clarifying necessary information in dictionaries, encyclopedias, and other reference publications. This method is extremely important for repeating what you have learned and consolidating it, especially when preparing for the test.

In order for each method to have the greatest effect, you need to record all the important points related to the topic you are interested in.

Abstracts are the main points of a scientific work, article, or other work, and possibly an oral presentation; they contain



more information than a plan. Simple theses are concise in form; complex ones-in addition to the main author's idea, they contain a brief justification and evidence that gives the theses a more weighty and convincing character. Abstracts of what you read allow you to reveal its content more deeply; by learning to express the essence of what you read in abstract form, you will be able to identify the most important and valuable thoughts of the authors and make generalizations.

A synopsis is a way to independently present the contents of a book or article in a logical sequence. When taking notes on a source, one should strive to say a lot in a few words. In the text of the summary, it is advisable to include not only conclusions or statements, but also their reasoned proofs (facts, figures, quotes).

You can also write a synopsis as you study the work, for example, if you are working on a monograph or several journal articles.

When writing a thesis or synopsis, always make links to the pages from which you took the abstract statement or fact. This will help you reduce the time spent searching for the right place in the book, if there is a need to understand the issue more deeply or clarify something when writing written works.

### **Methodological recommendations for completing tasks for independent work and evaluation criteria.**

An interview (oral survey) allows you to assess the student's knowledge and outlook, ability to logically construct an answer, monologue speech skills, and other communication skills.

A survey is the most important tool for developing thinking and speech. The training function of the survey is to identify details that, for some reason, were not sufficiently understood during training sessions and when preparing tasks for independent work.

**Abstract** -is a written work on a specific topic. In terms of content, an abstract is a short, meaningful summary of information on a given topic collected from various sources. It can also be a summary of scientific work, the results of studying any problem.

Evaluation criteria. The scoring system is used. During the survey, no more than 1 error or inaccuracy is allowed in the name of the period, its time and duration.

## **Guidelines for the implementation of the abstract**

### **Goals and objectives of the abstract**

Abstract (from Lat. refero-report, report) is a summary of a practical or theoretical problem with the formulation of certain conclusions on the topic under consideration. The problem chosen by the student is studied and analyzed on the basis of one or more sources. Unlike coursework, which is a comprehensive study of the problem, the abstract is aimed at analyzing one or more scientific papers.

*The goals* of writing an abstract are:

- Development of students ' skills in finding relevant problems up-to-date legislation;

- development of the skills of short presentation of the material with the emphasis only on the following topics:

the most significant points necessary to reveal the essence of the problem;

- development of skills of analysis of the studied material and formulation make your own conclusions on the chosen issue in writing, in a scientific and competent language.

*The tasks* of writing an abstract are:

- teach the student to convey as correctly as possible the opinions of the authors on the basis of whose works the student writes his abstract;

- teach the student to correctly state their position on the following issues: the problem analyzed in the abstract.

- prepare the student for further participation in scientific and practical conferences, seminars and competitions;

- help the student decide on a topic that interests them, further disclosure of which can be made when writing a scientific article;

- understand for yourself and state the reasons for your consent (disagreement) with the opinion of one or another author on this issue.

### **Basic requirements for the abstract content**

The student should use only those materials (scientific articles, monographs, manuals) that are directly related to the chosen topic. Detached reasoning that is not related to the problem being analyzed is not allowed. The content of the abstract should be specific, and only one problem should be investigated (several problems are allowed only if they are interrelated). The student must strictly adhere to the logic of presentation (start with the definition and analysis of concepts, go to the problem statement, analyze the ways to solve it and draw appropriate conclusions). The abstract should end with drawing conclusions on the topic.

Abstract – a student's creative activity that reproduces in its structure the research activity aimed at solving theoretical and applied problems in a particular branch of scientific knowledge. Because of this, coursework is the most important component of the educational process in higher education.

Abstract, being a model of scientific research, is an independent work in which the student solves a problem of a theoretical or practical nature, applying scientific principles and methods of this branch of scientific knowledge. The result of this scientific search can have not only subjective, but also objective scientific novelty, and therefore can be presented for discussion by the scientific community in the form of a scientific report or a message at a scientific and practical conference, as well as in the form of a scientific article.

Abstract involves the acquisition of skills in building business cooperation based on ethical standards of scientific activity. Purposefulness, initiative, unselfish cognitive interest, responsibility for the results of one's actions, conscientiousness, competence are personality qualities that characterize the subject of research activities that correspond to the ideals and norms of modern science.

An abstract is an independent academic and research activity of a student. The teacher provides consultative assistance and evaluates the process and results of the activity. He / she provides an approximate topic of abstract works, clarifies the problem and research topic together with the resident, helps to plan and organize

research activities, sets the time and minimum number of consultations.

The teacher accepts the text of the abstract for review at least ten days before the defense.

Traditionally, there is a certain structure of the abstract, the main elements of which, in order of their arrangement, are the following::

1. Title page.
2. Task.
3. Table of contents.
4. A list of symbols, symbols, and terms (if necessary).
5. Introduction.
6. The main part.
7. Conclusion.
8. Bibliographic list.
9. Applications.

The title page indicates: the educational institution, the graduating department, the author, the teacher, the research topic, the place and year of completion of the abstract.

The title of the abstract should be as brief as possible and fully correspond to its content.

The table of contents (content) reflects the names of the structural parts of the abstract and the pages where they are located. It is advisable to place the table of contents on a single page at the beginning of the work.

A detailed introduction is a mandatory requirement for the abstract. Despite the small volume of this structural part, its writing causes considerable difficulties. However, it is precisely a well-executed introduction that is the key to understanding the entire work, which testifies to the author's professionalism.

Thus, the introduction is a very important part of the abstract. The introduction should begin with a justification of the relevance of the chosen topic. When applied to an abstract, the concept of "relevance" has one special feature. It depends on how the author of the abstract knows how to choose a topic and how correctly he

understands and evaluates this topic from the point of view of modernity and social significance, characterizes his scientific maturity and professional readiness.

In addition, in the introduction, it is necessary to isolate the methodological basis of the abstract, to name the authors whose works formed the theoretical basis of the research. The review of literature on the topic should show the author's thorough acquaintance with special literature, his ability to systematize sources, critically examine them, highlight the essential, determine the main thing in the current state of knowledge of the topic.

The introduction reflects the meaning and relevance of the chosen topic, defines the object and subject, the purpose and objectives, and the chronological framework of the study.

The introduction concludes with a statement of general conclusions about the scientific and practical significance of the topic, the degree of its study and availability of sources, and a hypothesis.

The main part sets out the essence of the problem, reveals the topic, defines the author's position, provides factual material as an argument and illustrations of the proposed provisions. The author needs to show the ability to consistently present the material while simultaneously analyzing it. Preference is given to the main facts, rather than small details.

The abstract ends with the final part, which is called "conclusion". Like any conclusion, this part of the abstract serves as a conclusion determined by the logic of research, which takes the form of a synthesis of the accumulated scientific information in the main part. This synthesis is a consistent, logically coherent presentation of the results obtained and their correlation with the general goal and specific tasks set and formulated in the introduction. It is here that the so-called "inference" knowledge is contained, which is new in relation to the original knowledge. The conclusion may include practical suggestions, thereby increasing the value of theoretical materials.

So, the conclusion of the abstract should be: a) present conclusions based on the results of the study; b) theoretical and practical significance, novelty of the

abstract; c) indicate the possibility of applying the results of the study.

After the conclusion, it is customary to place a bibliographic list of references. This list is one of the essential parts of the abstract and reflects the independent creative work of the author of the abstract.

The list of sources used is placed at the end of the paper. It is written either in alphabetical order (by the author's last name or the title of the book), or in the order of references in the text of the written work. In all cases, the full title of the work, the names of the authors or the editor of the publication, if a team of authors participated in writing the book, data on the number of volumes, the name of the city and publishing house where the work was published, the year of publication, and the number of pages are indicated.

The volume of the abstract is 10-15 pages of typewritten text, but in any case it should not exceed 15 pages. Spacing – 1.5, font size-14, margins: left — 3cm, right — 1.5 cm, top and bottom — 1.5 cm. The pages should be numbered. The paragraph indent from the beginning of the line is 1.25 cm.

### **The procedure for submitting an abstract and its evaluation**

Abstracts are written by students during the semester within the time limits set by the teacher for a specific discipline, reported by the student and submitted for discussion. The printed version is given to the teacher who leads the discipline.

Based on the results of the examination, the student is awarded a certain number of points, which is included in the total number of student points scored during the semester. When evaluating an abstract, it takes into account the correspondence of the content to the chosen topic, the clarity of the structure of the work, the ability to work with scientific literature, the ability to pose a problem and analyze it, the ability to think logically, the possession of professional terminology, and the literacy of the design.

### **Guidelines for preparing presentations**

To prepare a presentation, we recommend using: PowerPoint, MS Word, Acrobat Reader, and the LaTeX package beamer. The simplest program for creating presentations is Microsoft PowerPoint. To prepare the presentation, you need to

process the information collected during the writing of the abstract.

Presentation preparation sequence:

1. Clearly state the purpose of the presentation.
2. Determine what the format of the presentation will be: a live performance (then how long it will last) or an email newsletter (what the context of the presentation will be).
3. Select the entire content part for the presentation and build a logical chain of presentation.
4. Identify key points in the text content and highlight them.
5. Define the types of visualizations (images) to display on slides in accordance with the logic, purpose, and specifics of the material.
6. Choose a design and format your slides (the number of images and text, their location, color, and size).
7. Check the visual perception of the presentation.

Visualization types include illustrations, images, diagrams, and tables. An illustration is a representation of a real visual series. Images – unlike illustrations – are a metaphor. Their purpose is to evoke an emotion and create an attitude towards it, to influence the audience. With the help of well-thought-out and imaginable images, information can stay in a person's memory for a long time. Diagram-visualization of quantitative and qualitative relationships. They are used for convincing demonstration of data, for spatial thinking in addition to logical thinking. Table – a specific, visual and accurate display of data. Its main purpose is to structure information, which sometimes makes it easier for the audience to perceive the data.

### **Practical tips for preparing a presentation**

- 📄 printed text + slides + handouts are prepared separately.
- 📄 slides – a visual presentation of information that should contain a minimum of text, a maximum of images that carry a semantic load, and look clear and simple.
- 📄 text content of the presentation – oral speech or reading, which should include arguments, facts, evidence, and emotions.

📖 The recommended number of slides is 17-22.

📖 mandatory information for the presentation: subject, surname and initials of the speaker; message plan; brief conclusions from all that has been said; list of sources used;

📖 handout material – should provide the same depth and reach as a live presentation: people trust what they can carry with them more than disappearing images, words and slides are forgotten, and the handout remains a constant tangible reminder; handout material is important to distribute at the end of the presentation; handouts should be different from slides, they should be more informative.

### **Abstract evaluation criteria**

- The stated understanding of the abstract as an integral author's text determines the criteria for its evaluation: the novelty of the text; the validity of the choice of source; the degree of disclosure of the essence of the issue; compliance with the requirements for design.

#### **- Originality of the text:**

a) relevance of the research topic;

b) novelty and independence in problem formulation, formulation of a new aspect of a known problem in establishing new connections (inter-subject, intra-subject, integration);

c) ability to work with research, critical literature, organize and structure the material;

d) clearness of the author's position, independence of assessments and judgments;

e) stylistic unity of the text, unity of genre features.

#### **- The degree of disclosure of the essence of the issue:**

a) compliance of the plan with the topic of the abstract;

b) correspondence of the content to the topic and plan of the abstract;

c) completeness and depth of knowledge on the topic;



d) validity of methods and methods of working with the material;

f) ability to generalize, draw conclusions, compare different points of view on one issue (problem).

 **Validity of the choice of sources:**


a) evaluation of the literature used: whether the most well-known works on the research topic are involved (including journal publications of recent years, recent statistics, summaries, references, etc.).


 **Compliance with registration requirements:**


a) how well the references to the literature used and the list of references are drawn up;


b) assessment of literacy and presentation culture (including spelling, punctuation, stylistic culture), knowledge of terminology;


c) compliance with the requirements for the volume of the abstract.


 The reviewer should clearly formulate a comment and questions, preferably with links to the work (you can use specific pages of the work), to research and factual data that the author did not take into account.


 The reviewer can also indicate: whether the student has addressed the topic before (essays, written works, creative works, Olympiad works, etc.) and whether there are any preliminary results; how the graduate conducted the work (plan, intermediate stages, consultation, revision and revision of the written or lack of a clear plan, refusal of recommendations from the supervisor).

 The student submits the abstract for review no later than one week before the defense. The reviewer is a teacher. Experience shows that it is advisable to familiarize the student with the review a few days before the defense. Opponents are assigned by a student teacher. For an oral presentation, a student needs 10-20 minutes (about the same time as answering tickets for the exam).

 A score of 5 is given if all the requirements for writing and defending an abstract are met: the problem is identified and its relevance is justified, a brief analysis of various points of view on the problem under consideration is made and one's own position is logically stated, conclusions are formulated, the topic is fully disclosed, the volume is maintained, the requirements for external design are met, correct answers to additional questions are given.

 Grade 4-the main requirements for the abstract and its defense are met, but there are some shortcomings. In particular, there are inaccuracies in the presentation of the material; there is no logical sequence in the judgments; the volume of the abstract is not maintained; there are omissions in the design; additional questions are not fully answered during the defense.

 Rating 3-there are significant deviations from the requirements for referencing. In particular: the topic is only partially covered; factual errors were made in the abstract content or when answering additional questions; there is no conclusion during the defense.

 Grade 2 – the topic of the abstract is not disclosed, there is a significant misunderstanding of the problem.

 Grade 1 – the student has not submitted an abstract.

Independent work of students consists of preparing for practical classes, working on recommended literature, writing reports on the topic of practical classes, preparing presentations.

The teacher offers each student individual and differentiated tasks. Some of them can be carried out in a group (for example, several students can prepare a report and presentations on the same topic with a division of their responsibilities – one prepares the scientific and theoretical part, and the second conducts an analysis of practice).

Independent work of students in the discipline is recognized not only to consolidate the knowledge gained in classroom classes (lectures and seminars), but

also to promote the development of students' creative skills, initiative, and the ability to organize their time. When performing an independent work plan, the student should read the theoretical material not only in the textbook and study guides indicated in the list of recommended literature, but also get acquainted with publications in periodicals and electronic resources. The student needs to creatively rework the material studied independently and submit it for the report in the form of an abstract or synopsis. Verification of the implementation of the independent work plan is carried out during seminars or during the defense of practical works.

The initial level of students' knowledge is determined by testing.

The current control of students' knowledge is determined by an oral survey during classes, when solving typical situational problems and answering test tasks, when evaluating work with phantoms and dummies, when defending essays and notes (independent work of students).

At the end of the study of the academic discipline, an intermediate certification of knowledge is carried out in the form of a test. The test aims to evaluate the student's work during the semester, the theoretical knowledge gained, their strength, the development of creative thinking, the acquisition of independent work skills, the ability to synthesize the acquired knowledge and apply it to solving practical problems. The credit for the discipline "Commercialization of scientific developments" includes a test control (assessment of theoretical knowledge), an assessment of students' professional competencies formed as a result of mastering the discipline as a result of writing a scientific article, and an interview.

### **Thematic plan for independent extracurricular work of students**

Independent work of students in the course of studying the discipline "Commercialization of scientific developments" takes up to 50% of the academic time. Much attention is paid to the individual work of the student and includes:

□ Developing students' skills of regular independent work with educational, scientific, normative and reference literature in preparation for practical and seminar classes.

Independent search by students for reliable information of a high level of

evidence that they need to solve specific problems (abstract work, research search).

□ Study of practical international and domestic recommendations with an evidence base.

Writing an abstract on a topic proposed by the teacher or independently selected by the student and agreed with the teacher.

Preparation of presentations using multimedia equipment.

Evaluation of the results of students ' independent work is organized by defending a creative project in front of single-thread students, a teacher, as well as invited experts, active entrepreneurs in the healthcare system. To assess the quality of mastering the discipline during monitoring activities, the following tools are provided:

□ An essay.

□ Project protection.

### **Essay assignment**

1. How do I understand the expression "medical entrepreneurship"?
2. What is the benefit to the country / me if I become a medical entrepreneur?
3. Under what conditions could I become a medical entrepreneur and how can I create these conditions?
4. How can I benefit from the course "Commercialization of scientific developments"?

### **Task for the project**

1. Project goals and objectives.
2. Stakeholders;
3. The team.
4. List of works;
5. Work plan;
6. Network schedule of the project.
7. Financial planning (price list, sales plan);
8. Responsibility matrix;
9. Organizational structure.

The organization of independent work of students involves performing a number of individual homework assignments (IDP) on a given topic. IDZ is one of the forms of academic and scientific work of students. The purpose of performing IDZ is to teach students to connect theory with practice, to instill the ability to develop development plans, calculate various indicators and build forecasts based on their analysis, to investigate the current situation and suggest ways to solve problems, to navigate freely in the modern economy, and to present complex issues in a popular way.

The work is submitted in a paper version and is protected by the student. Based on the results of the defense, a rating is issued.

The presentation of the material must meet the requirements for scientific research works. The research should be based on authoritative sources, the text should be well developed and edited (clarity, perceptibility, clarity, scientific style). The completeness of the presentation of the material is taken into account. Registration of completed IDZS is made according to the FEFU standard for completing coursework and final qualification works. The IDZ is 20-25 pages long.

#### **IDZ # 1.**

Perform a research project on the topic "**National Innovation System of the state**". The country of study is chosen at random by the student from the suggested list or in agreement with the teacher. The paper should address the issues of NIS formation, the structure of NIS, the role of the state in the process of NIS formation, existing problems and opportunities for their solution.

List of countries: United States, United Kingdom, Sweden, Canada, Japan, Israel, India, China, France, South Korea, Hong Kong, Singapore, Germany.

#### **IDZ # 2.**

Perform a research project on the topic "**Characteristics of the infrastructure of scientific, technical and innovative activities in Russia: an element**". The element of infrastructure for conducting research is chosen at random by the student from the proposed list or in agreement with the teacher.

**Infrastructure elements include:** information support; coordination and regulation system; financial and economic support; production and technological support system and certification of high-tech products; system of promotion of scientific and medical developments and high-tech products; training and retraining system.

### **List of abstract topics**

1. Methods of scientific cognition
2. Methods of system analysis in scientific research
3. The process of cognition, its structure and algorithm of cognition
4. Methodology of scientific research organization
5. Scientific research, its types and characteristics
6. Design and organization of scientific research
7. Methodological principles of choosing a scientific problem, research topic, object and subject of research
8. Methodological principles of selecting methods and methods of conducting scientific research
9. Principles and problems of generalization, design and presentation of scientific research results
10. Methodology for writing a scientific study
11. Scientific knowledge, its varieties, models of development of scientific knowledge

Scientific and non-scientific knowledge. Varieties. Philosophical and methodological basis of science as a technology for obtaining knowledge.

### **Recommendations for independent work of students**

The main content of topics, assessment tools: terms and concepts necessary for mastering the discipline are presented in the RPA.

In the course of mastering the course "Commercialization of scientific developments", the student will have to do a large amount of independent work,

which includes preparing for practical classes and writing an article on the chosen research topic.

Practical classes help students to learn more about the educational material, acquire skills of creative work on documents and primary sources.

Plans of practical classes, their topics, recommended literature, the purpose and objectives of its study are communicated by the teacher in introductory classes or in the curriculum for this discipline.

Before starting to study the topic, you need to familiarize yourself with the main questions of the practical lesson plan and the list of recommended literature.

When preparing for a practical lesson, first of all, you need to refer to the lecture notes, sections of textbooks and study guides in order to get a general idea of the place and meaning of the topic in the course you are studying. Then work with additional literature, make notes on recommended sources.

In the process of studying the recommended material, it is necessary to understand the structure of the topic under study, highlight the main points, follow their logic and thereby understand the essence of the problem under study.

It is necessary to keep records of the studied material in the form of a synopsis, which, along with visual memory, also includes motor memory and allows you to accumulate an individual fund of auxiliary materials for rapid repetition of what you read, for the mobilization of accumulated knowledge. The main recording forms are: a plan (simple and detailed), extracts, and abstracts.

In the process of preparation, it is important to compare sources, think through the material being studied and build an algorithm of actions, and carefully think through your oral presentation.

At the practical lesson, each participant should be ready to speak on all the issues raised in the plan, and show maximum activity when considering them. The presentation must be convincing and well-reasoned, and it is not allowed to simply read the abstract. It is important to show your own attitude to what is said, express your personal opinion, understanding, justify it and draw the right conclusions from what is said. At the same time, you can refer to the notes of the synopsis and lectures,

directly to the primary sources, use knowledge of monographs and publications, facts and observations of modern life, etc.

A student who did not have time to speak at the practical lesson can present the prepared abstract to the teacher for verification and, if necessary, answer the teacher's questions on the topic of the practical lesson in order to receive a credit score on this topic.

### **Individual task of the student**

In the process of independent work, the student performs an individual task:

1. Formulates the topic of scientific research with the help of the supervisor.
2. Formalizes the relevance of their future research, which reveals the scientific problem, the degree of its disclosure and resolution in modern scientific literature, contradictions in the authors' judgments. The student determines the direction of their scientific research
3. The student, with the help of the supervisor, formulates the goal of scientific research and tasks that reveal ways to achieve the goal.
4. The student formulates an approximate layout of the design of scientific research, defines the object, subject and methods of research.
5. The student generally formulates the results that he wants to get as a result of research.
6. The student presents a plan for the implementation of the upcoming study.
7. The student prepares a presentation for submission to the conference of FEFU students based on the materials of their research.

### **Criteria and indicators that are necessary for assessing knowledge, skills and abilities and characterize the stages of competence formation in the process of mastering an educational program:**

<i>An "excellent" grade is given if the student demonstrates::</i>	Ability to analyze basic concepts and directions; knowledge of basic social concepts, ability to operate with them; ability to present the work in a scientific context; possession of a scientific style of speech; knowledge of basic techniques and technologies in the chosen field of bioethical design; ability to analyze the projects of their predecessors in this field; reasoned defense of the main provisions of the work.
<i>Rating "good" issued if</i>	Ability to analyze the main concepts, directions;



<i>the student demonstrates:</i>	knowledge of the main bioethical categories and concepts, the ability to operate with them; knowledge of the analysis methodology and understanding of different types of analysis; reasoned defense of the main provisions of the work.
<i>A grade of "satisfactory" is given if the student demonstrates::</i>	Insufficient in-depth analysis of the material; lack of independence in determining the main points; mediocre defense of the main points of the work.
<i>A grade of "unsatisfactory" is given if the student demonstrates::</i>	Compilability of the work; lack of independence in the analysis of scientific material or design stages; inability to protect the main provisions of the work.

## VI. MONITORING PROGRESS TOWARDS COURSE GOALS

№ n/a number	Supervised modules/ sections / topics of the discipline	Codes and stages of competence formation		Evaluation tools-name	
				current control	interim certification
1	Module I. Organization of scientific activities in Russian universities	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 1-3
			is able to	PR-4.	
			owns	PR-9	
2	Module II. Organization of work with scientific and technical information at the university. Patent and licensing activities of	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 4-7
			is able to	PR-4.	
			owns	PR-9	
3	Module III. Commercialization of scientific research and its legal support	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 8-10
			is able to	PR-4.	
			owns	PR-9	
4	Module IV. University Innovation Infrastructure	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 11-13
			can	: PR-4	

			owns	PR-9	
5	Module V Features and prospects of student science development at the university	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 14- 16
			can	: PR-4	
			owns	PR-9	

Control and methodological materials, as well as criteria and indicators necessary for assessing knowledge, skills and abilities and characterizing the stages of competence formation in the process of mastering the educational program are presented below.

## **VII. LIST OF EDUCATIONAL LITERATURE AND INFORMATION AND METHODOLOGICAL SUPPORT OF THE DISCIPLINE**

### **Basic literature**

*(electronic and printed publications)*

1. Bogdanova O. V. Zashchita intellektual'nykh avtorykh prav grazhdansko-pravovymi metodami: monografiya [Protection of intellectual copyright by civil law methods: monograph]. Moscow. 212 pages.
2. Bliznets I. A. Intellectual property in the modern world: a monograph / Prospect. 2017. 668 p.
3. Gavrilyuk A.V. The essence, forms of implementation and functional purpose of technology transfer. 2018. No. 4. pp. 15-20.
4. Gavrilyuk A. V. a Scientific approach to the definition of the technology transfer process and to identify the nature of the implementation of Innovation and investment. 2018. No. 3. pp. 29-35.
5. Gavrilyuk A.V. [Network technology transfer: specifics of implementation and development prospects]. Electronic bulletin. 2018. No. 69, pp. 498-518.
6. Gavrilyuk A.V. Pravovoe regulirovanie i podderzhka peredata intellektual'noi sobstvennosti [Legal regulation and support of Intellectual property transfer]. 2018. No. 4. pp. 7-11.
7. Gavrilyuk A. V. Intensification of innovative activities of the State

Corporation "rostec" and the prospects for its development in the economic space of the EAEU / Public administration. Electronic bulletin. 2017. No. 60, pp. 49-70.

8. Gavrilyuk A.V. Dinamicheskiy (diskontirovanny) metod otsenki effektivnosti perekonologii tekhnologii [Dynamic (discounted) method for evaluating the effectiveness of technology transfer]. Ustoichivoe razvitie rossiiskoi ekonomiki: sbornik statei po materialam V Mezhdunarodnoi nauchno-prakticheskoi konferentsii (13-14 fevral'ya 2018 g.) [Sustainable development of the Russian economy: a collection of articles based on the materials of the V International Scientific and Practical Conference (February 13-14, 2018)]. pp. 161-167.

9. Gavrilyuk A.V. Subekty peredata tekhnologii i ikh osobennosti [Subjects of technology transfer and their features] / Innovatsionnaya ekonomika i menedzhment: metody i tekhnologii: sbornik materialov II Mezhdunarodnoi nauchno-prakticheskoi konferentsii (26 oktyabrya 2017 g.) / ed. by A. O. Kosorukov, V. V. Pechkovskaya, S. A. Krasilnikov. 320-322.

10. Gavrilyuk A.V. Transfer of the results of scientific research activities: a modern view and a scientific approach / Economic transformation and innovative technologies: collection of materials of the I International Scientific and Practical Conference (March 22, 2018). - Moscow: Scientific Center "SCIENCE PLUS", "University Book", 2018. pp. 69-73.

11. Gavrilyuk, A. V. Strategy of technology transfer: principles and expected results / Prospects for economic development and modern management techniques: proceedings of the I International scientific and practical conference (27 Mar 2018). – M.: Science center "SCIENCE PLUS", "University book", 2018. Pp. 79 – 83.

12. Gavrilyuk A.V. Nauchno-tekhnologicheskie parki kak instrument aktivizatsii innovatsionnoi deyatel'nosti [Scientific and technological parks as a tool for activating innovative activities]. Ustoichivoe razvitie rossiiskoi ekonomiki: materialy IV Mezhdunarodnoi nauchno-prakticheskoi konferentsii (16-18 Jan 2017). - Moscow : FSBEI HE "Lomonosov Moscow State University" / ARGAMAK-MEDIA, 2017. pp. 78-86.

13. Grant Allard, Suzie Allard Information behavior in the technology transfer

process / Proceedings of the Association for Information Science and Technology. Volume 54, Issue 1. 2017. P. 614 – 616.

14. Michael Danquah, Bazoumana Ouattara, Peter Quartey Technology Transfer and National Efficiency: Does Absorptive Capacity Matter? / African Development Review. Volume 30, Issue 2. 2018. P. 162 – 174.

15. Nefissa Chakroun Using technology transfer offices to foster technological development: A proposal based on a combination of articles 66.2 and 67 of the TRIPS agreement / The Journal of World Intellectual Property. Volume 20, Issue 3-4. 2017. P. 103 – 118.

**Additional literature:**

1. Federal Law No. 217-FZ of 02.08.2009 (as amended on 29.12.2012)"On Amendments to Certain Legislative Acts of the Russian Federation Concerning the Establishment of Business Entities by Budgetary Scientific and Educational Institutions for the Purpose of Practical Application (Implementation) of the Results of Intellectual Activity".

2. Federal Law No. 284-FZ of 25.12.2008 (as amended on 06.12.2011)"On the Transfer of Rights to Unified Technologies".

3. Federal Law No. 195-FZ of 19.07.2007 "On Amendments to Certain Legislative Acts of the Russian Federation regarding the Formation of Favorable Tax Conditions for Financing Innovation Activities".

4. Federal Law No. 174-FZ of 03.11.2006 (as amended on 27.11.2017) "On Autonomous Institutions "(with amendments and additions, intro. effective from 01.01.2018).

5. Federal Law No. 98-FZ of 29.07.2004 (as amended on 18.04.2018) "On Commercial Secrets".

6. Federal Law No. 127-FZ of 23.08.1996 (as amended on 23.05.2016) "On Science and State Scientific and Technical Policy "(with amendments and additions, intro. effective from 01.01.2017).

7. Law of the RSFSR No. 948-1 of 22.03.1991 (as amended on 26.07.2006)"On

Competition and Restriction of monopolistic activity in Commodity Markets".

8. Order of the Ministry of Education of the Russian Federation No. 1705 of June 06, 2000 (on the concept of scientific, scientific-technical and innovation policy in the education system of the Russian Federation for 2001-2005).

9. Concept of the draft Federal Law "On Scientific, Scientific-technical and innovative activities in the Russian Federation".

10. The main directions of the Russian Federation's policy in the field of innovation system development for the period up to 2010 (approved by the Government of the Russian Federation). Government of the Russian Federation No. 2473p-P7 of August 5, 2005).

11. Civil Code of the Russian Federation (Part Four) No. 230-FZ of 18.12.2006 (as amended on 23.05.2018).

12. Decree of the President of the Russian Federation No. 560 of 06.08.2014 (as amended). dated 12.07.2018) "On the application of certain special economic measures to ensure the security of the Russian Federation".

13. Decree of the President of the Russian Federation No. 485 of 28.09.2015 "On approval of the Regulations on the State Prize of the Russian Federation in the Field of Science and Technology and Lomonosov Moscow State University Working program" Transfer and commercialization of research results "21 Regulations on the State Prize of the Russian Federation in the field of literature and Art".

14. Decree of the President of the Russian Federation No. 642 of 01.12.2016 "On the Strategy of Scientific and Technological Development of the Russian Federation".

15. Decree of the Government of the Russian Federation No. 928 of 24.12.2007 (as amended on 18.11.2017)"On the Procedure for Verifying the Presence of Information Constituting a State Secret in Applications for the Grant of a Patent for an Invention, Utility Model or Industrial Design Created in the Russian Federation".

16. Government Resolution No. 928 of December 24, 2007 - Government Resolution No. 928 of December 24, 2007 "On the Procedure for Verifying the

Presence of Information Constituting a State Secret in Applications for the Grant of a Patent for an Invention, Utility Model or Industrial Design Created in the Russian Federation".

17. Decree of the Government of the Russian Federation No. 685 of 17.11.2005 (as amended on 22.04.2009) "On the procedure for disposing of rights to the results of Scientific and Technical activities".

18. Decree of the Government of the Russian Federation No. 342 of 22.04.2009 (as amended on 08.12.2011) "On some issues of regulation of securing rights to the results of scientific and technical activities".

19. Decree of the Government of the Russian Federation No. 1460 of 31.12.1999 "On a set of measures for the development and state support of small enterprises in the field of material production and promotion of their innovative activities".

20. Decree of the Government of the Russian Federation No. 374 of 31.03.1998 (as amended on 13.10.1999) "On creating conditions for attracting investment in the innovation sphere".

21. Decree of the Government of the Russian Federation No. 827 of 26.08.1995 (as amended on 10.07.1998) "On the Federal Fund for Industrial Innovations".

22. Decree of the Government of the Russian Federation No. 65 of 03.02.1994 (as amended on 21.06.2013) "On the Fund for Assistance to the Development of Small Forms of Enterprises in the Scientific and Technical sphere".

23. Decree of the Government of the Russian Federation No. 1607-r of 30.11.2001 "On the main directions of implementation of the state policy on involving the results of scientific and technical activities in economic turnover".

24. Order of the Ministry of Finance of the Russian Federation No. 153n dated 27.12.2007 (as amended on 16.05.2016) "On Approval of the Accounting Regulation" Accounting for Intangible Assets" (PBU 14/2007) " (Registered with the Ministry of Justice of the Russian Federation on 23.01.2008 No. 10975).

25. Berne Convention for the Protection of Literary and Artistic Works.

26. World Copyright Convention.

27. Agreement on cooperation in the field of Copyright and Related Rights Protection.

28. GOST R 58048-2017 Technology transfer. Guidelines for assessing the level of technology maturity / Standartinform. Moscow. 2018, 42 p.

29. GOST R 57194.1-2016 Technology transfer. General provisions / Standartinform. Moscow. 2016, 9 p.

30. GOST R 57194.2-2016 Technology transfer. Results of intellectual activity / Standartinform. Moscow. 2016, 15 p.

31. GOST R 57194.3-2016 Technology transfer. Technology audit / Standartinform. Moscow. 2016, 34 p.

**List of licensed software (if necessary):**

MS Office

**List of professional databases and information reference systems:**

1. EBS publishing house " Lan "[educational, scientific publications, primary sources, art works of various publishers; magazines]: website. – URL: <http://e.lanbook.com>.

2. EBS "Yurayt" [section "YOUR SUBSCRIPTION: textbooks and manuals of the Yurayt publishing house"]: website. – URL: <https://www.biblio-online.ru/catalog/>.

**List of Internet information and telecommunications network resources:**

1. Federal Service for Intellectual Property [Electronic resource]. - URL: <https://rupto.ru/ru>.

2. Federal State Budgetary Institution "State Commission of the Russian Federation for Testing and Protection of Breeding Achievements "(FGBU "Gossortkommissiya") [electronic resource]. - URL: <https://gossort.com/>.

3. Federal State Statistics Service [Electronic resource]. - URL: <http://www.gks.ru/>.

4. Rossiiskaya set ' peredata tekhnologii [Russian Technology Transfer Network]. - URL: <http://www.rtn.ru/>.

5. Eurasian network of technology transfer [Electronic resource]. - URL:

<http://www.eurasiancommission.org/>.

6. Agency for Technological Development [Electronic resource]. - URL: <https://techagency.ru/>.

7. European Commission. Network of innovation relay centers [Electronic resource]. - URL: [https://cordis.europa.eu/project/rcn/71370\\_en.html](https://cordis.europa.eu/project/rcn/71370_en.html).

8. European Network of entrepreneurship support [Electronic resource]. - URL: <https://een.ec.europa.eu/>.

### **Electronic resources**

1 . Classification of medical research methods /  
<http://zodorov.ru/klassifikaciya-metodov-medicinskih-issledovaniij.html>

2 . Concept and types of biomedical research /  
[http://studbooks.net/1787518/meditsina/ponyatie\\_vidy\\_mediko\\_biologicheskikh\\_issledovaniy](http://studbooks.net/1787518/meditsina/ponyatie_vidy_mediko_biologicheskikh_issledovaniy)

3 . Human clinical trials /  
[http://studbooks.net/1787516/meditsina/klinicheskie\\_issledovaniya\\_na\\_cheloveke](http://studbooks.net/1787516/meditsina/klinicheskie_issledovaniya_na_cheloveke)

4 . The concept of scientific research. Виды исследований /  
[https://studopedia.ru/14\\_87877\\_ponyatie-nauchnogo-issledovaniya-vidi-issledovaniy.html](https://studopedia.ru/14_87877_ponyatie-nauchnogo-issledovaniya-vidi-issledovaniy.html)

5 . Methodology of scientific research /  
<http://mirznanii.com/a/169085/metodologiya-nauchnykh-issledovaniy>

6 . Scientific Electronic Library <http://elibrary.ru/>

7 . Scientific and educational portal: <http://www.med-edu.ru/>

Catalog of Russian State Libraries and Libraries <http://aleph.rsl.ru>

## **VIII. METHODOLOGICAL GUIDELINES FOR MASTERING THE DISCIPLINE**

**Planning and organizing the time allotted for studying**



## **the discipline.**

You should start learning the discipline immediately at the very beginning of the academic semester. It is recommended to study the structure and main provisions of the discipline's Work Program. Please note that in addition to classroom work (lectures, practical exercises), independent work is planned, the results of which affect the final assessment based on the results of mastering the academic discipline. All tasks (classroom and independent) must be completed and submitted for evaluation in accordance with the schedule.

In the course of studying the materials of the training course, the following forms of work are offered: lectures, practical exercises, tasks for independent work.

*Lectures* are aimed at covering introductory topics in each section of the course and are designed to orient students in the proposed material, lay scientific and methodological foundations for further independent work of students.

**Practical exercises** are a collective form of reviewing educational material. Control of the results of independent work is carried out during practical classes, oral surveys, interviews, solving situational problems, control works, including by testing.

1. The student should prepare for the practical lesson: repeat the lecture material, read the necessary section on the topic in the textbook.
2. The lesson begins with a quick frontal oral survey on a given topic.
3. In the classroom, students work with lecture notes, slides.
4. For classes, you must have a notebook for writing down theoretical material, a textbook.
5. At the end of the lesson, homework is given on a new topic and it is suggested to make tests based on the material passed, which were studied in the lesson (summary).
6. Students' performances and activity per class are evaluated by the current grade.

Theoretical part of the discipline "Commercialization of scientific developments" is revealed in lecture classes, since the lecture is the main form of

training, where the teacher gives the basic concepts of the discipline.

The sequence of presentation of the material in the lecture sessions is aimed at forming an approximate basis for students to learn the material later when working independently.

In practical classes, during discussions in seminars, when discussing research papers and in classes using active learning methods, students learn to analyze and predict the development of medical science, reveal its scientific and social problems, questions of ethics and deontology.

Practical classes of the course are conducted in all sections of the curriculum. Practical works are aimed at developing students' skills of independent research work. In the course of practical classes, the student performs a set of tasks that allow you to consolidate the lecture material on the topic under study, get basic skills in the field of building diets for various population groups, taking into account their physiological characteristics. Active consolidation of theoretical knowledge is facilitated by discussing problematic aspects of the discipline in the form of seminars and classes using active learning methods (MAO). At the same time, the skills of independent research activity are developed in the process of working with scientific literature and periodicals, and the ability to defend one's point of view in a reasoned manner, listen to others, answer questions, and conduct a discussion is formed.

The purpose of conducting practical classes is to consolidate the knowledge gained by students at lectures, model practical situations, and also check the effectiveness of independent work of students.

The practical session usually includes an oral survey of students on the issues of the seminar sessions. At the same time, the degree of proficiency of graduate students in the material of the lecture course, basic textbooks, knowledge of current problems and the current situation in modern scientific activity is revealed. Further, the ability of students to apply the acquired theoretical knowledge to the planning and organization of scientific research, the ability to formalize the knowledge obtained during the study of scientific literature in reviews and articles is revealed.

A special feature of practical classes is the preparation of an abstract for the

planned scientific research, which includes the formulation of the topic of scientific work, justification of relevance, formulation of research goals and objectives, expected results and presentation of the work plan.

It is advisable to start preparing for a practical lesson by repeating the material of the lectures. In the course of independent work, the student first needs to study the material presented in the educational literature and monographs recommended by the teacher. Students should pay attention to the fact that the library list includes not only basic textbooks, but also more in-depth sources for each course topic. Consistent study of the subject allows the student to form a stable theoretical base.

In the course of independent work, the student first of all needs to independently study the current scientific literature presented in monographs, literary reviews, articles, scientific collections in order to determine promising areas of research.

For each lesson, students prepare for discussion materials necessary for planning scientific research and presenting the results of scientific activities.

The main types of independent work of students are working with literary sources and methodological recommendations on the history of medicine, bioethical problems, Internet resources for more in-depth acquaintance with individual problems of the development of medicine and bioethics. The results of the work are presented in the form of abstracts or reports with subsequent discussion. Abstract topics correspond to the main sections of the course. They are used as active learning methods in practical classes: press conference, extended conversation, dispute.

**A detailed conversation** involves preparing students for each issue of the lesson plan with a single list of recommended mandatory and additional literature. Reports are prepared by students on a pre-proposed topic.

**A dispute** in a group has a number of advantages. A dispute can be caused by the teacher during the lesson or planned in advance by him. In the course of polemics, students develop resourcefulness, quickness of mental reaction.

**Press conference.** The teacher instructs 3-4 students to prepare short reports. Then one of the participants of this group makes a report. After the report, students

ask questions, which are answered by the speaker and other members of the expert group. On the basis of questions and answers, a creative discussion is developed together with the teacher.

Independent work on the course is particularly important for the professional training of students *самостоятельная работа*. In the course of this work, students select the necessary material on the subject under study and analyze it. Students should familiarize themselves with the main sources, without which it is impossible to fully understand the problems of the course.

Mastering the course contributes to the development of skills for sound and independent assessments of facts and concepts. Therefore, in all forms of knowledge control, especially when passing the test, attention is paid to understanding the course's problems, the ability to apply knowledge practically and draw conclusions.

**Working with literature.** It is recommended to use various opportunities for working with literature: collections of the FEFU Scientific Library and electronic libraries (<http://www.dvfu.ru/library://www.dvfu.ru/library/>), as well as other scientific library systems available for use.

Oral interviews are conducted to conduct ongoing monitoring and interim certification.

**Preparation for the test.** Students who have completed all the tasks provided for in the discipline's curriculum and attended at least 85% of classroom classes are allowed to take the test.

Oral surveys and testing on various topics of the discipline are conducted to conduct ongoing monitoring and interim certification.

## **IX. MATERIAL AND TECHNICAL SUPPORT OF THE DISCIPLINE**

The educational process in the discipline is conducted in lecture and computer classes of the building of the School of Biomedicine of the FEFU campus, equipped with computers and multimedia systems, with connection to the FEFU corporate network and the Internet, the simulation Center of the FEFU School of Medicine.

For practical work, as well as for organizing independent work, students have

access to the following laboratory equipment and specialized classrooms that meet current sanitary and fire safety standards, as well as safety requirements for conducting educational and research and production work.

In order to provide special training conditions for disabled people and persons with disabilities, all FEFU buildings are equipped with ramps, elevators, lifts, specialized places equipped with restrooms, information and navigation support signs.

### Practical exercises:

Number and name of special * premises and premises for independent work	Equipment of special rooms and rooms for independent work	List of licensed software. Details of the supporting document
690922, Primorsky Krai, Russia Vladivostok, Russian Island, Saperny Peninsula, Ajax settlement, 10, room no. M 511, area 48.9m2	Multimedia auditorium: Electric Screen 236*147 cm Trim Screen Line; DLP Projector, 3000 ANSI Lm, WXGA 1280x800, 2000:1 EW330U Mitsubishi; CP355AF Avervision document camera, MP-HD718 Multipix video camera; CORSA-2007 Tuarex Dedicated hardware mount subsystem; Video commutation subsystem: Audio commutation and amplification subsystem: power amplifier, wireless LAN based on 802.11 a/b/g/n 2x2 MIMO(2SS) access points.	<ul style="list-style-type: none"> <li>-</li> <li>Windows Seven Seven Enterprise, version SP 3x64-operating system;</li> <li>- 1C Enterprise 8.2 (training version) 8.2.13.205-training software package;</li> <li>- Eset NOD32 Antivirus, version 4.2.76.1-malware detection tool;</li> <li>- Microsoft Office 2010 Professional plus, version 14.0.6029.1000-office suite;</li> <li>- Microsoft Office Professional Plus 2013, version 15.0.4420.1017-office suite;</li> <li>- Microsoft Visual Studio 2012 Professional, 11.0.50727.26 – training комплекс software package;</li> <li>- Microsoft Visual Studio 2013 Community, version 12.0.31101-training комплекс software package;</li> <li>- 7-Zip, version 9.20.00.0 – training software package;</li> <li>- Abbyy FineReader 11,</li> </ul>

		<p>version 11.0.460 - training software package;</p> <ul style="list-style-type: none"> <li>- Adobe Acrobat XI Pro, version 11.0.00 – training software package;</li> <li>- Adobe Photoshop CS6, version 13.0 – training software package;</li> <li>- Autodesk 3DS Max Design 2013, version 15.0.0.347 – training software package;</li> <li>- Autodesk 3DS Max Design 2015, version 17.1.149.0 – training software package;</li> <li>- Autodesk AutoCAD 2012, version 18.2.51.0 - training software package;</li> <li>- Autodesk AutoCAD 2013, version 19.0.55.0 – training software package.</li> </ul>
<p>Computer class of the School of Biomedicine, room M723, 15 working places</p>	<p>Electric Screen 236*147 cm Trim Screen Line; DLP Projector, 3000 ANSI Lm, WXGA 1280x800, 2000:1 EW330U Mitsubishi; CORSA-2007 Tuarex Dedicated hardware mount subsystem; Video commutation subsystem: DVI DXP 44 DVI Pro Extron matrix switch; DVI 201 Tx/Rx Extron twisted pair extension cable; Audio Commutation and Sound amplification subsystem; SI 3CT LP Extron ceiling mount speaker system; DMP 44 LC Extron digital audio processor; extension cable for the IPL T CR48 control controller; wireless LANs for students are provided with a system based on access points 802.11 a/b/g/n 2x2 MIMO(2SS). Monoblock HP Candy BarGOPE 400 All-in-One 19,5 (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, DVD+/-RW, GigE, Wi-Fi, W, usb kbd/mse, Win7Pro (64-bit)+Win8.1Pro(64-bit), 1-1-1 Wty</p>	<p>Microsoft Office Professional Plus 2013-an office suite that includes software for working with various types of documents (texts, spreadsheets, databases, etc.);</p> <p>7Zip 16.04-free file format archiver with a high degree of data compression;</p> <p>Adobe Acrobat XI Pro-a software package for creating and viewing electronic publications in PDF format;</p> <p>AutoCAD Electrical 2015 - a three-dimensional computer-aided design and drawing system;</p> <p>ESET Endpoint Security 5-comprehensive protection of workstations based on Windows OS. Virtualization support + new technologies;</p> <p>WinDjView 2.0.2-a program for recognizing and viewing files with the same format as DJV and DjVu; SolidWorks 2016-a CAD software package for automating the work of an industrial enterprise at the stages of design and technological preparation of production</p> <p>Kompas-3D LT V12-three-</p>

		dimensional modeling system Notepad++ 6.68-text editor
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**Independent preparation** of students for practical classes is carried out in computer classes equipped with Internet access:

Number and name of special * premises and premises for independent work	Equipment of special rooms and rooms for independent work	List of licensed software. Details of the supporting document
<p>690922, Vladivostok, Russian Island, Saperny Peninsula, Ajax settlement, 10.</p> <p>Reading rooms of the FEFU Scientific Library with open access to the fund (building A-level 10)</p>	<p>Моноблок HP Candy Bar Pro One 400 All-in-One 19,5 (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, DVD+/-RW, GigE, Wi-Fi, BT, usb kbd/mse, Win7 Pro (64-bit)+Win8.1 Pro (64-bit), 1-1-1 Wty</p> <p>Internet access speed is 500 Mbps.</p> <p>Workplaces for people with disabilities are equipped with displays and Braille printers; equipped with: portable devices for reading flat-screen texts, scanning and reading machines, a video magnifier with the ability to adjust color spectra; magnifying electronic magnifiers and ultrasonic markers</p>	<p>Microsoft Office Professional Plus 2013 - an office suite that includes software for working with various types of documents (texts)</p> <p>7Zip 16.04 - a free file archiver with a high degree of data compression;</p> <p>Adobe Acrobat XI Pro - a software package for creating and viewing electronic publications in PDF format;</p> <p>AutoCAD Electrical 2015 - a three-dimensional computer-aided design and drawing system;</p> <p>ESET Endpoint Security 5 - comprehensive protection of workstations on the Internet. based on the Windows OS. Virtualization support + new technologies;</p> <p>WinDjView 2.0.2 - a program for recognizing and viewing files with the same format as DJV and DjVu;</p> <p>SolidWorks 2016 - a CAD software package for automating the work of an industrial enterprise at the stages of design and technological preparation of production</p> <p>Kompas-3D LT V12 - three-dimensional modeling system</p> <p>Notepad++ 6.68 - text editor</p>

**Lecture sessions:**

Number and name of special * premises and premises for	Equipment of special rooms and rooms for independent work	List of licensed software. Details of the supporting document
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<p>independent work</p> <p>690922, Primorsky Krai, Russia Vladivostok, Russian Island, Saperny Peninsula, Ajax settlement, 10, room no. M 421, area 159.2 m2</p>	<p>Multimedia auditorium: Electric Screen 236*147 cm Trim Screen Line; DLP Projector, 3000 ANSI Lm, WXGA 1280x800, 2000:1 EW330U Mitsubishi; CP355AF Avervision document camera, MP-HD718 Multipix video camera; CORSA-2007 Tuarex Dedicated hardware mount subsystem; Video commutation subsystem: Audio commutation and amplification subsystem: power amplifier, wireless LAN based on 802.11 a/b/g/n 2x2 MIMO(2SS) access points.</p>	<p>- WindowsSevenSevenEnterprise, version SP 3x64-operating system; - 1C Enterprise 8.2 (training version)8.2.13.205-training software package; - Eset NOD32 Antivirus, version 4.2.76.1-malware detection tool; - Microsoft Office 2010 Professional plus, version 14.0.6029.1000-office suite; - Microsoft Office Professional Plus 2013, version 15.0.4420.1017-office suite; - Microsoft Visual Studio 2012 Professional, 11.0.50727.26 – trainingкомплексsoftware package; - Microsoft Visual Studio 2013 Community, version 12.0.31101-trainingкомплексsoftware package; - 7-Zip, version 9.20.00.0 – training software package; - Abbyy FineReader 11, version 11.0.460 - training software package; - AdobeAcrobatXIPro, version 11.0.00 – training software package; - Adobe Photoshop CS6, version 13.0 – training software package; - Autodesk 3DS Max Design 2013, version 15.0.0.347 – training software package; - Autodesk 3DS Max Design 2015, version 17.1.149.0 – training software package; - Autodesk Autocad 2012, version 18.2.51.0 - training software package; - Autodesk Autocad 2013, version 19.0.55.0 – training software package.</p>
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Practical training is conducted in the Department of Public Health and



## **X. VALUATION FUNDS**

The following evaluation tools are used for the discipline "Commercialization of Scientific Research":

Oral questioning:

1. Interview (OQ-1)
2. Presentation / Message (OQ-3)

Written papers:

1. Preparing a creative task
2. Abstract (WW-4)

### **Oral questioning**

An oral questioning allows you to assess the student's knowledge and outlook, ability to logically construct an answer, monologue speech skills, and other communication skills.

The training function is to identify details that, for some reason, were not sufficiently understood during training sessions and in preparation for the test.

Interview (OQ-1) – a control tool organized as a special conversation between the teacher and the student on topics related to the discipline being studied, and designed to find out the amount of knowledge of the student in a particular section, topic, problem, etc.

Presentation / message (OQ-3) – a product of independent work of the student, which is a public speech on the presentation of the obtained results of solving a certain educational and practical, educational and research or scientific topic.

### **Written papers**

A written answer teaches you to express your thoughts accurately, concisely, and coherently. Written verification is used in all types of control and is carried out in both classroom and extracurricular work.

The development of a creative project is a means to assess the student's ability to express the essence of the problem in writing, independently analyze this problem

using concepts and analytical tools of the relevant discipline, and draw conclusions and recommendations for practical health care.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competence achievement indicator
medical	PC-16-Capable and ready to perform analysis of morbidity, disability and mortality indicators to characterize the health of adults and adolescents	PC-16.1-observation of medical and statistical indicators of morbidity, disability and mortality characterizing the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies
		PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional field
	PC-17-Is ready to participate in the assessment of the quality of medical care using basic medical and statistical indicators	PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research
Code and name of the competence achievement indicator		Name of the assessment indicator (the result of training in the discipline)
PC-16.1-observation of medical and statistical indicators of morbidity, disability and mortality characterizing the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies		Knows medical and statistical indicators of morbidity, disability and mortality, the procedure for issuing documents certifying temporary and permanent disability, as well as methods for evaluating scientific sources of information; algorithm for compiling a monographic and review abstract features of a scientific text and requirements for its design; ways of presenting numerical information. Able to analyze medical and statistical performance indicators of a medical organization that characterize the health of the attached population using educational, scientific, popular science literature, the Internet for professional activities

Task type	Code and name of professional competence (result of mastering)	Code and name of the competence achievement indicator
		Possession the methodology for calculating and evaluating quantitative and qualitative medical and statistical indicators of work on morbidity, disability and mortality of medical organizations and their structural divisions; present the results of analysis of medical and statistical indicators of morbidity, disability and mortality of patients, as well as methods for analyzing the results of their own activities to prevent professional mistakes: knowledge of various functions of a manager: planning, organization control , regulation, monitoring and controlling, ability to consciously choose the optimal strategy, etc.
PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional field		<p>Knows the principles, methods and tools for analyzing statistical reporting, including forms of branch and federal statistical observation</p> <p>It can solve standard tasks when analyzing data from official statistical reports, including federal and industry sources of statistical observation.</p> <p>Has skills in preparing reports and publications on the analysis of official statistical reporting data</p>
PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research		<p>; Knows how to maintain standard accounting and reporting medical documentation in medical organizations on morbidity, disability and mortality indicators when assessing the health of the attached population, as well as the essence of evidence-based medicine; types of scientific sources of information; methods of evaluation of scientific sources of information; algorithm for compiling a monographic and review abstract; features of a scientific text and requirements for its design</p> <p>Can analyze and evaluate the quality of medical care, use medical information systems to assess the health of the attached population; analyze and evaluate information from scientific sources; compile a monographic and review abstract on the research topic; analyze ways to present numerical data in terms of speed of perception, data volume, and logic; create a presentation to the report on the results of the study</p> <p>Has the skills of analyzing and preparing reports, compiling reports on medical and statistical indicators of morbidity, disability and mortality to assess the health of the attached population; skills in designing a scientific text; - skills in determining the type of numerical data; skills in choosing the optimal way to present numerical data using different types of tables and diagrams</p>

## MONITORING PROGRESS TOWARDS COURSE GOALS

№ n/a number	Supervised modules/ sections / topics of the discipline	Codes and stages of competence formation		Evaluation tools-name	
				current control	interim certification
1	Module I. Organization of scientific activities in Russian universities	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 1-3
			is able to	PR-4.	
			owns	PR-9	
2	Module II. Organization of work with scientific and technical information at the university. Patent and licensing activities of	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 4-7
			is able to	PR-4.	
			owns	PR-9	
3	Module III. Commercialization of scientific research and its legal support	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 8-10
			is able to	PR-4.	
			owns	PR-9	
4	Module IV. University Innovation Infrastructure	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 11-13
			can	: PR-4	
			owns	PR-9	
5	Module V Features and prospects of student science development at the university	PC-16.1 PC -16.2 PC-17.2	knows	OQ-1 PR-1 OQ-3	Test Question 14-16
			can	: PR-4	
			owns	PR-9	

### Assessment scale for the level of competence formation

Code and formalization of the competence	Indicators	Stages of competence formation	Criteria	Indicators	Points	
PC-16 has been developed and is ready to analyze morbidity, disability and mortality indicators for the health characteristics	PC-16.1- observation of medical and statistical indicators of morbidity, disability and mortality characterizing	them Knows	medical and statistical indicators of morbidity, disability and mortality, the procedure for issuing documents certifying temporary and permanent disability,	Methods for evaluating scientific sources of information; algorithm for compiling a monographic and review abstract	Knowledge of the features of a scientific text and requirements for its design; methods for presenting numerical information.	65-71

of adults and adolescents	the health of the attached population, calculation and evaluation, as well as the application of modern research methods in the relevant professional field using modern research methods and information and communication technologies	Can	analyze medical and statistical indicators of the work of a medical organization that characterize the health of the attached population using educational, scientific, popular science literature, and the Internet for professional activities	Can analyze the main statistical indicators of population health of the population	Ability use educational, scientific, popular science literature, and the Internet for professional activities	71-84
		Knows	the methodology for calculating and evaluating quantitative and qualitative medical and statistical indicators of work on morbidity, disability and mortality of medical organizations and their structural divisions; present the results of analysis of medical and statistical indicators of morbidity, disability and mortality of patients,	Skills in calculating and evaluating quantitative and qualitative health indicators of the population, as well as skills in presenting statistical indicators of population health for analyzing the activities of a medical organization	Knowledge of methods of analyzing the results of their own activities to prevent professional mistakes: knowledge of various functions of the manager: organization planning, regulation, monitoring and controlling, ability to consciously choose the optimal strategy.	85-100
	PC-16.2- analyzes official statistical reporting data, including forms of federal and sectoral statistical observation, based on modern research methods in the relevant professional	Knows	Knows the principles, methods and tools for analyzing statistical reporting, including forms of branch and federal statistical observation	Basic principles, methods and tools for analyzing statistical reporting, including federal and industry-specific report forms	; use of regulatory documents on basic principles, methods and tools for statistical reporting-	65-71
		It can	solve standard tasks when analyzing data from official statistical reports, including federal and industry sources of statistical observation.	Set goals and tasks for solving standard problems in the analysis of official statistical reporting data	Ability to analyze and compare data from official statistical reports, including federal and industry sources	71-84

	field	Has	skills in preparing reports and publications on the analysis of official statistical reporting data	Skills in preparing reports and publications on the analysis of official statistics	Proficiency in preparing analytical materials, references, reports, publications on the analysis of official statistical reporting	data 85-100
PC-17-Ready to participate in the assessment of the quality of medical care using basic	PC-17.2-analyzes medical and statistical indicators of morbidity, disability and mortality to assess the health status of the attached population based on the principles of independent decision-making in the field of management and organization of scientific research	Knows	how to maintain standard accounting and reporting medical documentation in medical organizations on morbidity, disability and mortality indicators when assessing the health of the attached population,	Maintaining standard accounting and reporting medical documentation in medical organizations based on statistical indicators of population health of the attached population	Knowledge of regulatory legal acts on documentation on maintaining standard accounting and reporting medical documentation in medical organizations; the essence of evidence-based medicine; types of scientific sources of information; methods for evaluating scientific sources of information; algorithm for compiling a monographic and review abstract; features of a scientific text and requirements for its design	65-71

medical and statistical indicators		Can	analyze and evaluate the quality of medical care, use medical information systems to assess the health of the attached population, analyze and evaluate information from scientific sources;	Can analyze and evaluate the quality of medical care based on information technologies for the attached population; analyze ways to represent numerical data in terms of speed of perception, data volume, and consistency;	Ability to use regulatory documentation for assessing the quality of medical care with the use of information systems for assessing public health; to create a monographic and review abstract on the research topic; to create a presentation for the report on the results of the study	71-84
		Has	the skills of analyzing and preparing reports, compiling reports on medical and statistical indicators of morbidity, disability and mortality to assess the health of the attached population.	Skills in analyzing and preparing reports and publications on medical and statistical indicators of morbidity, disability, and mortality of the attached population	Skills in designing a scientific text; skills in determining the type of numerical data; skills in choosing the optimal way to represent numerical data using different types of tables and diagrams	85-100

*\*A **critterion** is a sign that can be used to judge the difference between the state of one phenomenon and another. The criterion is broader than the indicator, which is an integral element of the criterion and characterizes its content. The criterion expresses the most general feature used to evaluate and compare real phenomena, qualities, and processes. And the degree of manifestation, qualitative formation, and definiteness of criteria are expressed in specific indicators. A criterion is a tool, a necessary evaluation tool, but it is not an evaluation itself. Functional role of the criterion – in determining or not determining the essential features of an object, phenomenon, quality, process, etc.*

***The indicator** acts in relation to the criterion as a particular to the general.*

*The indicator does not include a universal measurement. It reflects individual properties and attributes of the object being recognized and serves as a means of accumulating quantitative and qualitative data for criterion generalization.*

*The main characteristics of the concept of "indicator" are concreteness and diagnostic nature, which implies its availability for observation, accounting and recording, and also allows us to consider the indicator as more specific in relation to the criterion, and therefore the latter's meter.*

### **Evaluation tools for intermediate certification**

#### **Questions for the test (11th semester)**

1. What is "technology commercialization" and who are the participants of

commercialization projects?

2. Main functions of the commercialization project manager.
3. Main stages of commercialization processes.
4. The main characteristics of the "Enthusiasm-time" and "Cost-time" curves.
5. Differences between the concept of " Technology " for the author and the buyer.
6. Factors that affect the speed of research and the amount of resources involved.
7. Typical business models used in the innovation sphere.
8. Commercialization in research institutes and universities.
9. What are the "Commercialization Strategies"?
10. Criteria for evaluating the commercial potential of new technologies.
11. Trends in high-tech markets.
12. Consumer advantages of the developed products.
13. The role of intellectual property in commercialization.
14. Approaches to positioning new technological products depending on their characteristics.
15. What are the "dominant advantages" of new products?
16. Pricing in commercialization projects

**Criteria for grading a student on an exam / test in the discipline  
"Commercialization of scientific developments"**

Assessment of the exam	Requirements for the developed competencies
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"excellent"	An "excellent" grade is given to a student if he / she has thoroughly and firmly mastered the program material, presents it exhaustively, consistently, clearly and logically in a coherent manner, is able to closely link theory with practice, freely copes with tasks, questions and other types of knowledge application, and does not find it difficult to answer when modifying tasks, uses the material of a monographic article in the answer. literature, correctly justifies the decision made, has versatile skills and techniques for performing practical tasks;
"good"	A student is rated "good" if he / she knows the material well, presents it correctly and to the point, does not allow significant inaccuracies in the answer to the question, correctly applies theoretical provisions when solving practical questions and tasks, has the necessary skills and techniques for their implementation;
"satisfactory"	The grade "satisfactory" is given to the student if he has knowledge only of the main material, but has not mastered its details, makes inaccuracies, insufficiently correct wording, violations of the logical sequence in the presentation of the program material, has difficulties in performing practical work;
"unsatisfactory"	The grade "unsatisfactory" is given to a student who does not know a significant part of the program material, makes significant mistakes, and performs practical work with great difficulty.

### **Evaluation tools for current certification**

**Control tests** are intended for students studying the course "Commercialization of scientific developments".

When working with tests, you are asked to choose one of the three or four possible answers. At the same time, the tests are not the same in complexity. Among the suggested tests, there are several variants of correct answers. The student must provide all the correct answers.

The tests are designed for both individual and collective solutions. They can

be used in both classroom activities and independent work. The selection of tests required for the control of knowledge in the process of intermediate certification is made by each teacher individually.

The results of test tasks are evaluated by the teacher on a five-point scale for certification or according to the "credit" – "non-credit" system. An "excellent" rating is given if you correctly answer more than 90% of the tests offered by the teacher. Score "good" – if you correctly answer more than 70% of the tests. Score "satisfactory" – if you answer 50% of the suggested tests correctly.

### **Sample test tasks**

**1. The business plan of an innovative project is:**

Answer: A short program document that provides an overview of the goals, methods of implementation and expected results of an innovation project

**2. The following methods of remuneration are used in innovation activities:**

Answer: material , labor, status issues

**3. The following forms are used in innovation activities:**

**incentives:**

Answer: individual, collective

**4. The following concepts of motivation are used in innovation management::**

Answer: functional, procedural

**5. The "market challenge" model is based on the following statement:**

Answer: innovation is focused on customer requirements

**6. The "technological push" model is based on the following statement: Answer:**

innovations are focused on existing technological opportunities

**7. Important factors of innovation diffusion are:**

Answer: effective communication channels; business focus on higher profits

**8. The expected increase in profit from the introduction of innovation is 800 thousand rubles per year. The research return index is 0.5%. Then the cost of an innovative project:**

Answer: 1,600 thousand rubles.

**9.Venture capital financing is:**

Answer: risky financing of inventions and scientific and technical developments

**10.Venture financing includes:**

Answer: Providing a long-term loan without receiving guarantees, but at a higher interest rate than in banks

**11.Venture capital is capital that:**

Answer: it is invested by specialized structures with their simultaneous participation in the management of a young company whose securities are not listed on the stock market  
Answer: it is invested with a high degree of risk

**12.Developing an organization's innovation development strategy is the basis for creating and maintaining a competitive advantage**

Answer: yes

**12.The main difference between a business incubator and other technology parks**

**structures are:**

Answer: development of an independent business entity

**13.The State industrial policy consists of:**

Answer: in regulating relations between the state and industrial enterprises of the public and private sectors

**14.State research centers operate as follows:**

Answer: the status is assigned for 2 years with its extension (removal) based on the results of performance evaluation

**15.The duality of the innovation process is manifested in the fact that it:**

Answer: it combines the features of research and business

**16.The Violents ' motto:**

Answer: "Cheap, but decent"

**17. Actions to which, first of all, the innovative activity of the firm should be directed:**

Answer: systematic, regular search for opportunities to create innovations; patent analysis

**18. An activity that aims to energize the people working in the organization and encourage them to work effectively to improve the goals set out in the plans is ... .**

Answer: motivation

**19. The diffusion of innovation is:**

Answer: spreading the mastered innovation to new areas of application **20. For the active functioning of the national innovation system, it is necessary to::**

Answer: demand for innovation by the state and society; availability of legal acts on stimulating and economic support of the innovation process

**21. Domestic enterprises in innovation activity are characterized by the following model:**

Answer: external investment

**22. The following types of information are used to develop innovative projects:**

Answer: scientific and technical (patent); economic

**23. Modern Russia is characterized by a combination of such technological structures as:**

Answer: third, fourth, fifth

**24. Extensive development of the country's economy requires:**

Answer: availability of cheap labor; availability of cheap natural resources

**25. The problem of dynamic analysis solved by the extrapolation method assumes that the main development factor is:**

Answer: time factor

**26. The company's R & D costs are:5 million rubles a year, and the turnover value is 200 million rubles a year. Then the value of the coefficient of innovation (manufacturability) of the enterprise:**

Answer: 2.5%

**27. The discounted cost return index characterizes:**

Answer: the ratio of total discounted cash inflows to 42 total discounted cash outflows

**28. Innovations are:**

Answer: the final result of implementing an innovation to change the object of management and obtain an economic, social, environmental, scientific, technical or other result

**29. Innovation has the following properties:**

Answer: scientific and technical novelty, commercial feasibility, industrial applicability

**30. The innovation strategy involves:**

Answer: gaining competitive advantages by creating and implementing product and process innovations to meet existing or new needs

**31. Innovative development of an organization is a competitive advantage for:**

Answer: high rank

**32. Innovative activity is distinguished from other types of entrepreneurial activity by:**

Answer: uncertainty and risk, impossibility of strict goal setting **33. Innovative communications in the field of investment relations are different:**

Answer: increased risk and uncertainty of results, especially economic ones; non-traditional forms of investor-innovator relations

**34. Innovative communications arise when:**

Answer: participants in the innovation process enter into market relations, share the result and bear the risks associated with innovation

**35. Innovative communications are:**

Answer: comprehensive information exchange activities in the process of innovation materialization and commercialization

**36. Innovative strategies are always effective**

Answer: no

**37. An innovation manager should have the following qualities:**

Answer: initiative, responsibility, determination, perseverance in achieving the goal; organizational skills, ability to work with people **38. Innovation management studies:**

Answer: methods and tools for effective management of research, development,

implementation, production and commercialization of innovations

**39. An innovative project is:**

Answer: a system of scientific, technical, organizational, legal, financial and economic documentation required for the implementation of innovations at the enterprise (organization)

**40. The innovation process in the content aspect includes parallel and sequential implementation of the following stages: Idea > research and development > design and development > development >.... > operation (service)**

Answer: production\* :

**41. The innovation process consists of**

Answer: the process of creating, developing, and bringing scientific and technical ideas to commercial use :

**42. The innovation process consists of**

Answer: the process of creating, developing, and bringing scientific and technical ideas to commercial use

**43. Innovation risk is defined as:**

Answer: the probability of losses when investing in the implementation of product and process innovations

**44. Innovation differs from other business processes:**

Answer: fundamental uncertainty

**45. Intellectual property includes:**

Answer: industrial property, copyright

**46. The intensive nature of economic growth is ensured if the following conditions are met:**

Answer: outstripping the growth rate of production volumes over the growth rate of costs

**47. The basic forms of organization of the innovation process include::**

Answer: Program-oriented; Administrative-economic; Initiative

**48. Types of research work include:**

Answer: fundamental; applied

**49. Types of development work include:**

Answer: technical; commercial

**50. Types of planned calculations in the innovation planning process include:**

Answer: product-specific; technical-economic; volume-calendar

**51. Types of technopolises include:**

Answer: Innovation centers; Scientific and research parks; Technology centers

**52. Qualitative forecasting methods include:**

Answer: commission method; Delphi method; point estimation method

**53. Areas of innovative development include:**

Answer: chemicalization; automation and mechanization; electrification

**54. The areas of effectiveness of innovative development include:** Answer:

Technical effect; Resource effect; Social effect; Economic effect

**55. Scientific personnel (personnel) include:**

Answer: professionally trained specialists directly involved in the production of scientific knowledge and the preparation of scientific results for practical use

**56. New features include:**

Answer: discoveries, inventions, patents, trademarks, documentation for new equipment, technology, marketing research results

**57. Organizational and managerial levels of innovation management include:**

Answer: Tactical

**58. The main tasks of innovation management include:**

Answer: identify reserves for reducing the cost of production; determine the environmental consequences of introducing innovations

**59. The main directions of commercialization of intellectual products, sources of receipt of objects of industrial property in circulation do not include:**

Answer: Transfer free of charge from third parties

**60. The main principles of innovation planning include:**

Answer: priority; continuity of planning; economic feasibility of planning; end-to-end planning

**61. The main elements of an innovation project include:**

Answer: A set of project activities; Goals and objectives that reflect the main directions of the project; Key project indicators, including performance indicators; Organization of project activities

**62. The features of innovative activity in the field of IT include::** Answer: the time for innovation is much shorter

**63. The forms of innovation process include:**

Answer: simple intra-organizational; simple inter-organizational; advanced

**64. The functions of innovation management include:**

Answer: planning, organization, control, motivation, regulation, coordination

**65. Which of these factors can be critical success factors in the development of an innovative organization?**

Answer: availability of a unique technology; availability of a patent-protected invention; availability of highly qualified personnel

**66. Commercialization of an innovation involves:**

Answer: the process of bringing an innovation to the market

**67 The commercial value of an innovation is determined by:**

Answer: the amount of real profit received by the buyer during the commercialization of the innovation

**68. Controlled indicators of an innovation project are:**

Answer: costs, results, and deadlines

**69. Monitoring the implementation of an innovation project is aimed at:**

Answer: comparison of planned and actual indicators of an innovation project for strategic and operational adjustments

**70. Logical sequence of strategy formation stages:**

Answer: selection of a general corporate strategy; formation of a business strategy; formation of a functional strategy; formation of operational strategies (within functional areas, departments, etc.)

**71. They better meet the small-scale needs of specific consumers:**

Answer: Commutators



**72. Marketing innovations are:**

Answer: selection of new communication channels for product promotion on the market; development of new product packaging

**73. The Delphi method refers to the following methods:**

Answer: collective expertise

**74. The "Commission" method applies to:**

Answer: methods of collective expertise

**75. At present, most enterprises start their innovation activities with:**

Answer: purchasing a ready-made innovation

**76. The scientific and practical basis for choosing an innovation strategy is:**

Answer: product life cycle theory, the company's market position

**77. A scientific and industrial complex created for the production of new progressive products or for the development of new high-tech technologies based on close relations and interaction with scientific and technical centers is ...**

Answer: technopolis\*

**78. The state's scientific and technical strategy includes:**

Answer: long-term course of state scientific and technical policy, formation of promising scientific and technical goals

**79. Scientific and technological progress means:**

Answer: the process of continuous development of science, technology, technology, improvement of labor items, forms and methods of production organization

**80. Intangible assets are:**

Answer: a type of non-current asset that does not have a physical basis, but represents value based on the rights of its owners

**81. The need for strategic management is due to:**

Answer: an increase in the uncertainty of long-term trends due to scientific and technological progress

**82. Uneven (cyclical) economic development is associated with:** Answer: with

the change of generations of equipment and qualitative changes in the workforce

**83. The new economy includes the following components:**

Answer: financial; informational; innovative

**84. Organizational and managerial innovations are:**

Answer: new organizational structures, forms of work organization, decision-making, and monitoring of their implementation

**85. The main purpose of technology parks is to:**

Answer: creating the necessary infrastructure for innovative businesses; providing consulting services to innovative firms

**86. The main goal of innovation incubators is to:**

Answer: formation of high-tech firms

**87. The main requirements for management solutions are:**

Answer: target orientation; validity; security

**88. The main engine of innovation processes in a market economy is:**

Answer: Gaining a competitive advantage

**89. The main principle of state financing of scientific and technical activities is:**

Answer: combination of financial support for scientific organizations and targeted funding for specific scientific and technical programs and projects

**90. The main directions of innovation commercialization are:**

Answer: contribution to the authorized capital of an economic entity; transfer free of charge from third parties; transfer for joint activities

**91. The main disadvantages of collective expert methods are:** Answer: subjectivism, focus on reputable experts

**92. The main features of scientific and technical innovation are:** Answer: novelty, compliance with market needs, profitability

**93. The main forms of planning for the implementation of an innovation project are:**

Answer: business plan; feasibility study

**94. The main features of venture financing are:**

Answer: the venture investor assumes only commercial risk; the venture investor invests funds for no more than 5-7 years; the venture investor does not seek to acquire a controlling stake; no collateral is provided for venture financing

**95. Features of innovation as an object of management are:**

Answer: uncertainty of results, multivariance, **probability**

**96. The difference between venture financing and strategic partnerships is:**

Answer: placement in the form of a share contribution to the authorized capital of the company

**97. Assessment of the innovative potential of an enterprise (organization) is carried out according to the following indicators:**

Answer: the cost of research and development work, the number of patents, copyright certificates, the number of scientific and technical personnel

**98. Evaluation of the economic efficiency of innovations is necessary:**

Answer: to select an innovative project for its implementation; to assess the impact of innovations on the financial performance of the enterprise

**99. Evaluation of the effectiveness of an innovation project should be carried out according to the following principle:**

Answer: "with the project – without the project"

**100. The period for calculating the effectiveness of an innovation project is determined by:** Answer: a period of moral aging and loss of competitiveness of the product or process-innovation

**101. Pioneers in the market:**

Answer: exploiters

**102. Indicators for evaluating the commercial effectiveness of an innovation project are:**

Answer: net discounted income, internal rate of return; rate of return, cost recovery period

**103. Sequence in order of increasing the risk of obtaining the expected scientific, technical and economic effect from the implementation of the following innovative measures:**

Answer: improving the quality of manufactured products through pseudo-innovations; improving technical specifications. and organizational level of production by introducing process-enhancing innovations; mastering modifications of basic product and process innovations; mastering new basic innovations that determine the transition to a new technological order

**104. Sequence of types of documentation developed during the implementation of an innovation project:**

Answer: terms of reference; technical proposal; draft design; technical design; working draft

**105. Sequence of actions within the framework of the strategic process implementation:**

Answer: SWOT analysis; identifying key points based on strategic analysis; forming strategy options and evaluating them; choosing the best strategy option; providing the strategy with resources :

**106. Sequence of innovative structures by increasing volume of innovative services provided and complexity**

Answer: incubators; technoparks; technopolises; regions of science and technology

**107. The sequence of the following cycles in terms of increasing significance:**

Answer: life cycles of specific products; cycles of economic development of individual industries and enterprises; cycles of economic development of individual countries; cycles of technological waves

**108. Sequence of economic growth factors by significance (in decreasing order):**

Answer: innovations (innovations); the volume of fixed capital; the level of education and professional training of the population; the quantity and quality of natural resources; improving the use of resources.

**Examples of test tasks.**

1. Science is...

a) the development and theoretical systematization of objective knowledge;

- b) the doctrine of the principles of the construction of scientific knowledge;
  - c) teachings on the forms of construction of scientific knowledge
  - d) strategy for achieving the goal
2. The methodology of science is...
- a) A system of methods operating in a particular science
  - b) purposeful cognition
  - c) reproduction of new knowledge
  - d) the doctrine of the principles of the construction of scientific knowledge;
3. Theory is...
- a) Developing a common science strategy
  - b) a logical generalization of experience in a particular branch of knowledge;
  - c) purposeful cognition
  - d) a system of methods functioning in a particular science
4. Plan-prospectus -
- a) it is a document on the principles of disclosure of the topic
  - b) a scientific document
  - c) this is a document on the main provisions of the content of future work
  - d) this is a document on the main provisions of the content of future work
- (textbook, dissertation), the principles of disclosure of the topic, construction, the ratio of the volumes of parts
5. Annotation —
- a) this is a document on the main provisions of the content of future work (textbook, dissertation).
  - b) this is a brief description of the content
  - c) this is a brief description of the content, purpose of the publication, its reader's address, form.
  - d) a scientific document
6. Table of contents and table of contents —
- a) mandatory elements of the reference apparatus of scientific and methodological works.

- b) sections of scientific work.
- c) sections of the book.
- d) sections of methodical work.

7. Resume (from the French resumer - to state briefly) -

- a) These are conclusions.
- b) this conclusion
- c) these are practical recommendations.
- d) this is a brief, in the form of conclusions, a statement of the content of the work, most often an article, a report.

8. Appendices are part of the text,

- a) having additional significance, but necessary for a more complete coverage of the topic: placed at the end of the publication.
- b) are placed at the beginning of the publication.
- c) are marked at the end of each chapter.
- d) having additional significance.

9. The index contains:

- a) List of authors;
- b) list of authors;
- c) a list of the main thematic objects;
- d) a list of the main thematic objects (subjects) discussed or mentioned in the text of a scientific, methodological or reference publication

10. The author's sheet is taken as a unit of volume of the manuscript

- a) equal to 10 thousand printed characters
- b) equal to 30 thousand printed characters
- c) equal to 20 thousand printed characters
- d) equal to 40 thousand printed characters (22-23 typewritten pages, printed in two intervals).

11. The paragraph is

- a) indent to the right at the beginning of the first line of each part of the text.
- b) indent to the left at the beginning of the first line of each part of the text.

- c) indentation at the top.
- d) indentation at the bottom.

12. A scientific text is characterized by:

- a) Integrity and coherence
- b) semantic completeness, integrity and coherence, reasoning dominates here, the purpose of which is to prove the truths revealed as a result of the study
- c) brevity
- d) semantic completeness

13. In scientific work, speech is most often conducted

- a) from a neutral person
- b) the first person
- c) in the third person ("the author believes"), the first form is rarely used and the second person form of singular pronouns is not used at all
- d) the second person singular;

14. The author of the dissertation acts

- a) in the second person singular
- b) from a neutral person
- c) in a single person
- d) in the plural and instead of "I" uses "we", trying to reflect his opinion as the opinion of a scientific school, a scientific direction*

15. An important quality for the author of a scientific text —

- a) the ability to write.
- b) clarity, ability to write in an accessible and intelligible way.
- c) the ability to write intelligibly.
- d) clarity.

16. Another necessary requirement for writing a scientific paper is

- a) the ability to avoid repetitions, excessive detail, verbal husks.
- b) the ability to avoid repetition.
- c) brevity, the ability to avoid repetitions, excessive detail, the use of unnecessary words, unnecessarily foreign words.

d) brevity.

17. Final qualification work for a certified specialist —

a) this is a thesis.

b) it is a scientific work.

c) it is a methodical work.

d) this is a master's thesis.

18. Discharge —

a) these are letters, signs, words, sentences typed differently than the main body of the text: a font of a different weight, etc.

b) these are signs, words, sentences

c) these are signs.

d) these are letters.

19. The quoted text must correspond exactly

a) The content of the source.

b) the tasks of methodical work.

c) the tasks of scientific work.

d) the source with the obligatory reference to it and compliance with the requirements of bibliographic standards.

20. Table —

a) verbal-digital material organized into vertical columns (columns) and horizontal lines, forming a kind of grid, each element of which is an integral part, columns and lines

b) part of the scientific work.

c) the form of presentation of scientific material.

d) the form of presentation of methodological material.

21. Illustrative material plays an important role in scientific and methodological publications,

a) It must be extensive and profound.

b) it should be concise.

c) it should be organically connected with the text and help the reader better



perceive the essence of the content of the book.

d) it must be specific.

22. Drawing as a drawn image

a) The reproduction of something serves as a general term in the publication for the presentation of many kinds of illustrations.

b) it is illustrated material.

c) it is part of a scientific work.

d) serves as a general term in the publication.

23. Graph (from the Greek graphikos — inscribed) —

a) it is a drawing.

b) a drawing used for a visual geometric representation of the quantitative dependence of various kinds of phenomena.

c) it is a geometric image.

d) it is part of a scientific work.

24. Diagram (from gr. diagramma — drawing, drawing) —

a) it is a graphic representation.

b) it is part of a scientific work.

c) it is a drawing

d) a drawing that clearly shows the relationship between the various

25. Scheme —

a) this is an illustration, with the help of conventional graphic means and designations transmitting the device, the relationship (connections) of the parts, the structure of an object.

b) it is a drawing.

c) it is part of a scientific work.

d) this is an illustration.

26. Bibliographic description —

a) It is information.

b) it is part of a scientific work.

c) this is an idea of the content of a scientific work.

d) information about a printed work or other document that makes it possible to get an idea of its content, readership, volume, etc.

27. The bibliographic list contains

a) Methodological observations.

b) practical recommendations.

c) bibliographic description.

d) a bibliographic description of the sources used and (or) recommended and placed in the work after the conclusion.

28. In dissertations, the bibliographic list shall include:

a) individual authors of world renown.

b) only those sources that are referenced in the main text.

c) any sources.

d) only studied authors.

29. Caption to the illustration:

a) it is part of a scientific work.

b) This is a brief summary.

c) this is the text under the illustration, the bibliographic list includes only those sources explaining its content and linking it with a number with the text to which it relates.

d) this is an abstract.

30. Highlighting in the text serves to

a) to distinguish parts and elements of the text by significance, structure, or to convey additional meaning without the help of words.

b) to pay attention.

c) for beauty.

d) to improve the quality of work.

### **Criteria for evaluating the performance of test tasks**

<b>Percentage of correct answers</b>	<b>Evaluation</b>
From 86% to 100%	It's cool

From 85% to 76%	Ok
From 75% to 61%	Satisfactorily
Less than 61 %	Unsatisfactorily